THE SYSTEMATICS OF THE HYLAEINE BEES (HYMENOPTERA: COLLETIDAE) OF THE ETHIOPIAN ZOOGEOGRAPHICAL REGION: THE GENERA AND SUBGENERA WITH REVISIONS OF THE SMALLER GROUPS

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ABSTRACT. The genera and subgenera of hylaeine bees of the Ethiopian Region are characterized and separated by a key; pertinent morphological features are illustrated. Within *Hylaeus* four subgenera are recognized: *Deranchylaeus* Bridwell and *Metylaeus* Bridwell, as well as two new subgenera, *Alfkenylaeus* and *Cornylaeus*. *Nothylaeus* Bridwell (=*Anylaeus* Bridwell n. syn.) is regarded as a genus apart from *Hylaeus*. Two new genera are described: *Calloprosopis* in Kenya and *Psilylaeus* in Cape Province. All groups except *Deranchylaeus* and *Nothylaeus* are revised in this part. *Prosopis albonasata* Strand is a synonym of the Palaearctic species, *H. signatus* (Panzer) and is probably incorrectly cited from "Kapland." The following species, described as hylaeines, are all allodapine anthophorids: *Prosopis gracilis* Bingham, *P. pernix* Bingham, *P. quadrilineata* Cameron, *P. 5-lineata* Cameron, and *P. sandaracta* Bingham.

INTRODUCTION

This is the first of three parts treating the hylaeine bees of the Ethiopian zoogeographical region. For purposes of this study, the Ethiopian zoogeographical region encompasses all of the African continent below the Sahara Desert, including the Cape Region, but excluding the Malagasy Region. This introductory part includes keys to the genera and subgenera, revisions of all groups except *Hylaeus,* subgenus *Deranchylaeus,* and the genus *Nothylaeus.* The second part will revise the genus *Nothylaeus* and the final part will treat the species here assigned to the subgenus *Deranchylaeus* of *Hylaeus.*

Early work on these bees consisted of descriptions of various species in papers by J.D. Alfken, P. Cameron, T.D.A. Cockerell, H. Friese, F. Smith, and E. Strand (see Literature Cited); these species were described, for the most part, under the old generic name *Prosopis,* though some of the works by Cockerell employed *Hylaeus.* In 1919 J.C. Bridwell attempted to organize the, by then numerous, species into genera and subgenera. He recognized three genera: *Nothylaeus, Metylaeus,* and *Hylaeus. Nothylaeus* was further divided into two subgenera, *Nothylaeus* and *Anylaeus.* Those species assigned to *Hylaeus* were all placed in his new subgenus *Deranchylaeus.*

In this same study, Bridwell relied heavily on characteristics of the male genitalia. But, since he was unfamiliar with many of the previously described forms, placement of these in his scheme was based on imperfect descriptions and he was not always correct. Cockerell (1942) noted some difficulty in recognizing Bridwell's groupings. In the main, however, the classification proposed by Bridwell is sound and provides a basis on which the present study was constructed. At the time this revision began, there were 93 species-group names applied to Ethiopian Region hylaeines.

The first part of this study, in addition to recharacterizing the previously described genera and subgenera, describes two new genera and two new subgenera of *Hylaeus.* These smaller groups are revised. Regrettably, these small groups appear to consist of species that are mostly rare or uncommon and the amount of material available is limited.

Hylaeine bees commonly nest in hollow plant stems, apparently utilizing already excavated sites. Unfortunately, there have been no studies of the nesting biology of the African species. Similarly, there are scanty records of the flower visitations for African species. Such data as are available are cited under each species.

TERMINOLOGY AND MEASUREMENTS

Figures 1–5

Antennal socket diameter (ASD). The maximum diameter, between the outer margins, at a right angle to the longitudinal axis of the head in frontal view.

Basal clypeal width (BCW). The distance between the subantennal sutures along the basal margin of the clypeus.

Clypeal length (CL). The median length of the clypeus from the basal margin to the apical margin; this differs from Houston's (1975) measurement, which extends to the level of the

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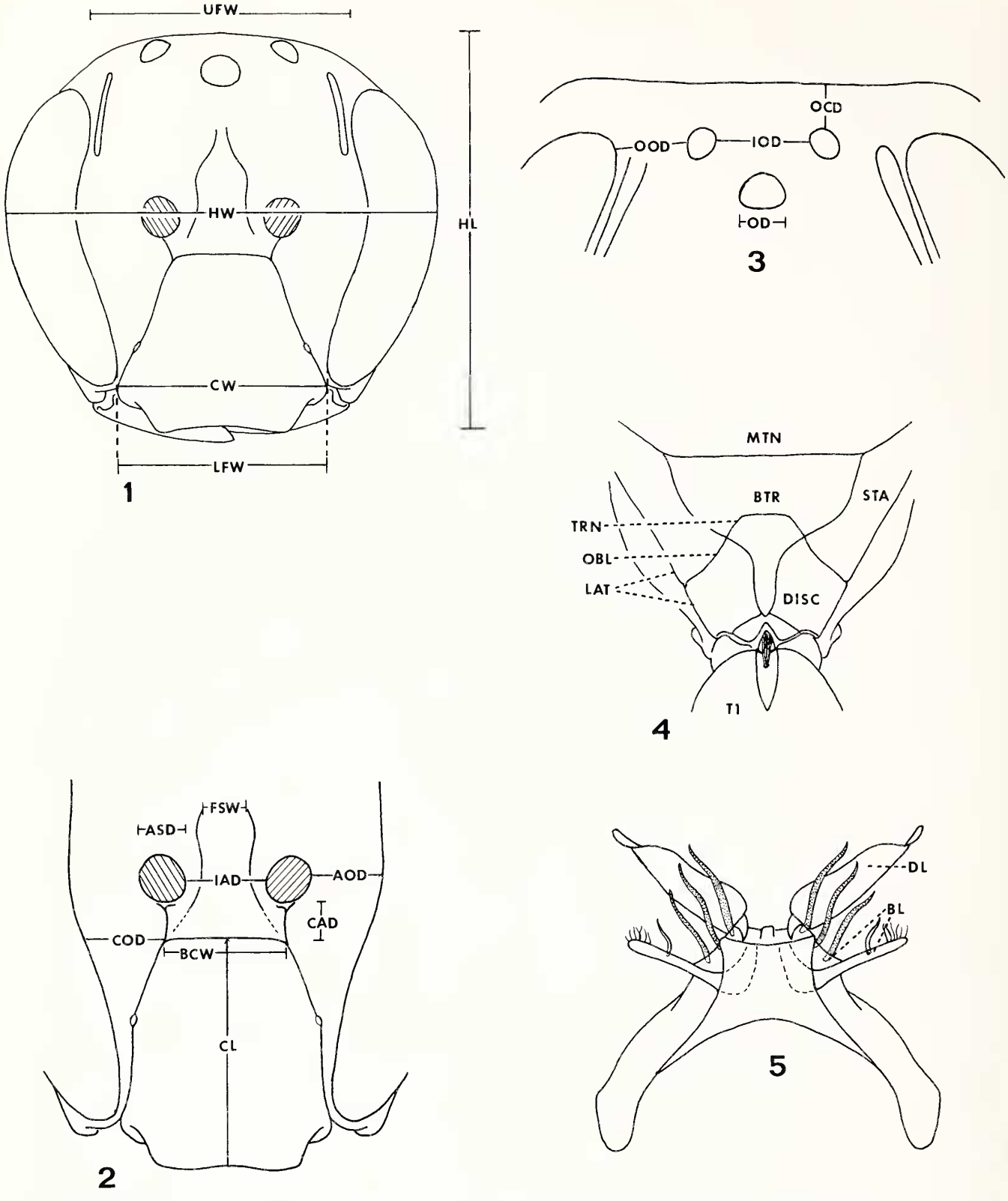


Figures 1–5. Taxonomic characters of Hylaeinae. **1,** frontal view of female head; **2,** lower face of female; **3,** ocellocular area, dorsal view; **4,** posterodorsal view of propodeum; **5,** male sternum 7 (lateral teeth stippled). Abbreviations: AOD, antennocular distance; BL, basal lobe; BTR, basal triangle; CAD, clypeoantennal distance; CW, clypeal width; DL, distal lobe; LAT, lateral carina; MTN, metanotum; OBL, oblique carina; OCD, ocelloccipital distance; STA, stigmatal area; T1, tergum 1; TRN, transverse carina. See text (Terminology and Measurements) for remaining abbreviations.

lowermost extremity of the clypeus, but is consistent with my prior usage.

Clypeo-ocular distance (COD). The minimum distance between the laterobasal angle of the clypeus and the inner eye margin.

Frontal shield (FS). For the usually elevated and marginate area of the face above and between the antennal sockets, Houston (1975) has proposed "elevations of the interantennal area." This is cumbersome and I prefer to use the simpler "frontal shield." The frontal shield is elevated above the frons and is distinctly margined and usually widened at about the midpoint. Houston has noted that the width of the frontal shield (FSW) at its apex on the frons, when compared to the diameter of the antennal socket (ASD), is useful as a specific character.

Head length (HL). The maximum midline distance between the occipital margin and the apical margin of the clypeus, in frontal view.

Head width (HW). The maximum breadth, across the eye, of the head in frontal view.

Interantennal distance (IAD). The minimum distance between the inner margins of the antennal sockets.

Interocellar distance (IOD). The minimum distance between the posterior ocelli.

Lower facial width (LFW). The minimum distance between the eyes at their lower end. This term is utilized in its relationship to UFW (q.v.) to express degree of convergence of the inner eye margins: *weakly convergent*—UFW 1.01–1.29 × LFW; *moderately convergent*—UFW 1.30–1.49 × LFW; *strongly convergent*—UFW 1.50–1.70 × LFW; *very strongly convergent*—UFW more than 1.70 × LFW.

Ocellar diameter (OD). The transverse diameter of the anterior ocellus.

Ocellocular distance (OOD). The minimum distance between a posterior ocellus and the inner eye margin.

Pilosity. The distribution of hairs on hylaeine bees, whether simple or short-plumose, is monotonously uniform, and pilosity is not accorded attention here except when it offers useful differences between species. The following characteristics apply generally throughout the Ethiopian Region fauna and will receive no further mention.

The hairs are uniformly whitish; those on the inner surface of the tarsal segments are usually yellowish, and the extremely short hairs of the face are often brownish yellow; females may have a few long dark brown or blackish hairs on the last tergum and/or sternum.

Very short, simple, suberect to erect hairs are very sparsely distributed over the surfaces of the head and thorax. Similar, but slightly longer, appressed to suberect hairs are present on the abdominal segments and they may be abundant on the apical terga.

Short, short-plumose, suberect to erect hairs are present on the face above the level of the antennal sockets, on the gena (where they become longer toward the mandibular base and toward the gula), on the side of the thorax, on the side and disc of the propodeum and on the sides of the abdominal terga, as well as on the discs of the third and following segments. They are sparse on all areas except the side and disc of the propodeum where they are conspicuously more abundant.

Relatively long, erect, short-plumose hairs are present around the antennal sockets, on the vertex, around the wing bases, on the side and center of the thorax, and on the apical terga and sterna. They are most abundant around the antennal sockets and wing bases and on the thoracic venter.

Slightly shorter, mixed barbulate and short-plumose hairs are present on the mandible, antennal scapes, and the legs. They are sparse on those segments and are usually suberect to erect, often moderately curved.

Important specific characters of pilosity are: the presence of long, erect, short-plumose hairs on the lower face, the mesoscutum, and the discs of the abdominal terga; the presence of a transverse fascia of short, appressed, short-plumose hairs on the pronotal collar; the presence of long, ereet, short-plumose hairs at the juncture of the anterior and dorsal faces of the first tergum and/or at the side of that segment; the presence of fasciae, entire or not, of short, appressed, short--plumose hairs preapically on any of the abdominal terga. Although other differences between species do exist, they are often too subtle to be useful and are, therefore, ignored here.

Pronotal lobes. Houston (1975) proposed to call the dorsal and posterior lobes of the pronotum the "pronotal collar" and "pronotal tubercles," respectively. Since Michener (1965) has already utilized the former following a tradition established by earlier workers, the usage is continued here, as it has been in my earlier papers. In place of "pronotal tubercles," I still prefer the older term "pronotal lobes," for they are lobes and not tubercles.

Propodeum. The hylaeine propodeum is useful in determining group relationships, and it is convenient to refer to specific subdivisions in the descriptions. In dorsal view, the most obvious feature is the more or less horizontal basal or dorsal face; a pair of sutures extends from the antero-lateral margin, converging toward the postero-median margin of the basal area. The resultant somewhat triangular area is the *basal triangle,* the apex of which is situated on the posterior, more or less vertical surface, here called the *propodeal disc;* the disc is divided by a median groove, the sides of which are continuous with the margins of the basal triangle. The lateral margin of the disc, at its juncture with the *side* of the propodeum, is often marked by a low carina, the lateral carina, which may extend forward to the anterior margin of the propodeum, but usually does not. At the point where the lateral carina reaches the basal face there may be another low carina which extends obliquely mesad to join the side of the triangle; this is the *oblique carina.* The area mesally bounded by the margin of the triangle, posteriorly by the oblique carina and laterally by the lateral carina (or its imaginary extension) is the *stigmatal area* (after Benoist, 1959) and is equivalent to the "lateral area" of Dathe (1980).

Punctation. I prefer to use puncture in preference to Houston's (1975) "pit"; the former is long established and consistent with general terminology used in apoid systematics. Houston illustrated his various terms (minute, fine, small, medium, large, coarse) to express relative size of punctures, but I prefer more absolute definitions. Puncture diameters

are measured, by means of an ocular micrometer, at 120×, and the following terminology applies to various puncture diameters:

minute	0.010–0.019 mm
fine	0.020–0.035 mm
moderate	0.036–0.055 mm
coarse	0.056–0.070 mm
very coarse	over 0.070 mm

Since punctures are rarely of one size on a given segment or stipulated area, they may be described as "fine to moderate" (puncture diameter varying between 0.020 and 0.055 mm), though usually a more limited size range, such as "moderate" prevails.

The relative density of the punctation on a given segment is often different in closely related and otherwise similar species. The commonly applied terms such as close, dense, sparse, etc., are usually not defined and subject to considerable latitude of interpretation. I have attempted to standardize my terminology for ease in comparison and, perhaps, encourage some degree of accepted usage. Because the interspaces within an indicated area are somewhat variable in extent, the stated condition in descriptions is that which is prevalent:

Contiguous punctures are so close that they are often deformed; their interspaces are greatly compressed and sharp edged.

Subcontiguous punctures are separated by more or less flat-topped interspaces up to about 0.25 puncture diameters; at its lower extreme this merges into contiguous.

Dense punctures are separated by more or less flat-topped interspaces varying from about 0.30 to about 0.70 puncture diameters; most commonly about 0.50 puncture diameters.

Close punctures are separated by more or less flat-topped interspaces varying from about 0.70 to about 1.50 puncture diameters.

Sparse punctures are separated by distances from 2.00 to about 3.00 puncture diameters.

Scattered punctures are separated by very irregular interspaces, from about 3.00 to as much as 6.00 puncture diameters, often with extensive areas devoid of punctation.

Since size and density of punctation are often not uniform on all areas of a given segment, the following comments are necessary. The description of clypeal punctation is derived from the basal one-third of that segment; punctures usually are somewhat coarser toward the apex and often are sparser along the midline. Genal punctation is finest on the upper one-third and becomes gradually coarser, closer and more distinct toward the base of the mandible.

The mesoscutal punctation is described from the area between the midline and the parapsidal line at the level of the tegula; punctures become finer and, often closer, anterior to this area; often coarser and somewhat sparser in the posteromedian area, but very fine and dense along the mesoscutal-scutellar suture. Scutellar and metanotal punctation are described from the mesal one-third of each segment. The middle of the mesopleural disc is the standard for that segment as is also true for the side of the propodeum.

Scape length (SL). The standard measurement, exclusive of the basal condyle.

Scape width (SW). The maximum width of the scape.

Sculpture. Except for the obvious differenees related to punctation, I have not devoted much attention to superficial texture. My main reason is simply that the superficial texture varies considerably within a species, and the differences between closely related species are often so subtle that descriptions are useless and/or largely subjective. So, I use "tessellate" generally to describe the surface: "lightly tessellate" corresponds approximately to Houston's "lineo-reticulate" and "closely tessellate" is approximately equivalent to his "pit-reticulate"; lineolate is the same as his "transversely lineo-reticulate."

Total length (TL). This is the least satisfactory of measurements used here; it is certainly the least exact. The method used here differs from the conventional ones, but seems less subject to the vagaries resulting from wide variations in the death posture of the specimen or its final, mounted condition. The TL is derived by adding the following: HL + thoracic length (in dorsal view, along the midline, from the anterior margin of the pronotal collar to the posterior margin of the dorsal or basal face of the propodeum) + length of tergum 1 (dorsal view along the midline, with the summit of the basal face just occluding the basal attachment) + length of tergum 2 (along midline, from gradulus to apical margin).

Upper facial width (UFW). The *minimum* distance between the eyes above, at about the level of the anterior ocellus, or somewhat below, but *not* at the point of greatest width as Houston (1975) has it. The usage here is consistent with that in my earlier papers.

Wing length (WL). The length of the anterior wing, from the tegular margin to the wing apex.

DESCRIPTIONS

The descriptions of genera and subgenera are divided into three sections. First is a Diagnosis, a brief statement of the outstanding features of the taxon. This is followed by the Description. The Description consists of numbered statements, and they are directly comparable at the appropriate (i.e., generic or subgeneric) level. Concluding is another statement, supplemental to the Description, of additional characteristics of taxonomic interest.

The species descriptions are more detailed than those of the genera and subgenera. Although the statements are not numbered, a uniform descriptive format is used, so descriptions of species are comparable.

Previously described species are usually not redescribed. In most instances the characteristics noted in keys and discussions should be ample. All new species are fully described.

ABBREVIATIONS OF MUSEUMS

AMNH American Museum of Natural History, New York, New York, U.S.A.

BMNH British Museum (Natural History), London, U.K.

CAS California Academy of Sciences, San Francisco, California, U.S.A.
CORN Cornell University, Ithaca, New York, U.S.A.
DEI Deutsches Entomologisches Institüt, Eberswalde bei Berlin, D.D.R.
GEMB Faculté des Sciences Agronomiques de l'état, Gembloux, Belgium
LACM Natural History Museum of Los Angeles County, Los Angeles, California, U.S.A.
MCZ Museum of Comparative Zoology, Cambridge, Massachusetts, U.S.A.
MNHN Muséum National d'Histoire Naturelle, Paris, France
MNHU Museum für Naturkunde der Humboldt-Universität, Berlin, D.D.R.
MRAC Musée Royal de l'Afrique Central, Tervuren, Belgium
PRET National Collection of Insects, Pretoria, South Africa
SAM South African Museum, Cape Town, South Africa [In 1981 the Hymenoptera collections of the National Museum of Rhodesia (now Zimbabwe), Bulawayo, were transferred to the South African Museum, Cape Town. Material borrowed from the Rhodesian National Museum is, therefore, included herein under SAM.]
UKAN University of Kansas, Lawrence, Kansas, U.S.A.
USNM National Museum of Natural History, Washington, D.C., U.S.A.

LIST OF EXCLUDED SPECIES

The following species are excluded for reasons stated under each name.

Prosopis albonasata Strand, 1912. Described from a single male from "Kapland." The type has been examined, and I eonclude that the loeality may be spurious. This is a synonym of the Palaearetic species, *Hylaeus* (*Prosopis*) *signatus* (Panzer) (NEW SYNONYMY).

Prosopis gracilis Bingham, 1903. Described from a female presumably from Durban, Natal, in BMNH. According to Michener (1975), a synonym of *Braunsapis facialis* (Gerstaecker) (Anthophoridae).

Prosopis pernix Bingham, 1903. Described from a female from Port Natal, Natal. According to Michener (1975), this is a valid species in *Allodape* (Anthophoridae).

Prosopis quadrilineata Cameron, 1905. Described from a female from Grahamstown, Brak Kloof, in BMNH. Michener (1975) treats this as a valid species in *Allodape.*

Prosopis 5-lineata Cameron, 1905. Described from a female from Stellenbosch, Cape Province, in BMNH. According to Michener (1975), this is a synonym of *Allodape pictifrons* F. Smith.

Prosopis sandaracta Bingham, 1903. Described from a female from Durban, Natal, in BMNH. Friese (1909) stated that this is a synonym of *Hylaeus purpurisata* (Vachal) of Algeria, but there is no evidence that he actually saw the type. According to Cockerell (1934), this is a synonym of *Allodapula variegata* (F. Smith) (Anthophoridae) with which Michener (1975) concurs.

KEY TO GENERA AND SUBGENERA OF ETHIOPIAN REGION

1. Integument of both sexes black, red or both, never strongly metallic; metatibia of female without raised glabrous area at base; male genitalia with well-developed, cup-like base 2
– Integument of both sexes metallic blue to blue-green; metatibia of female with raised glabrous area at base; male genitalia with gonobase reduced to a basal ring (Fig. 61) ..... *Calloprosopis,* new genus
2. Supraclypeal area elevated between antennal sockets and laterally marginate; propodeum with defined basal area and usually coarsely rugose or roughened or sharply punctate, at least in part 3
– Supraclypeal area gently sloping from midline to antennal sockets, not laterally marginate; propodeum smooth, densely tessellate, without defined basal area; entire body densely tessellate, without conspicuous punctures ..... *Psilylaeus,* new genus
3. Apical margin of mandible transverse or oblique, bi- or tridentate, mandible short and broad (Figs. 12–15) (*Hylaeus*) 4
– Apical margin of mandible acute, without distinct teeth, mandible elongate and slender (Figs. 16–17) ..... *Nothylaeus* Bridwell
4. Integument variously punctate; scutellum and metanotum without lateral spines; occipital carina often absent; mesepisternum not sharply carinate, but sometimes with obscure ridge at juncture of lateral and anterior faces 5
– Integument very coarsely punctate; scutellum and metanotum each usually with a pair of spines; occipital carina present, sharp; mesepisternum sharply carinate at juncture of anterior and lateral faces ..... subg. *Metylaeus* Bridwell
5. Male, antenna 13-segmented, gaster with 7 visible segments 6
– Female, antenna 12-segmented, gaster with 6 visible segments 9
6. Gonocoxite abruptly narrowed over apical one-third or more (Figs. 31, 36, 40, 45) 7
– Gonocoxite terminating bluntly at level of apex of aedeagus (Figs. 21, 50) 8
7. Face and first tergum coarsely, closely punctate; lateral lobes of sternum 7 thin, strap-like, very short (Fig. 29); apex of gonocoxite without barbulate setae ..... *Alfkenylaeus,* new subgenus
– Face finely punctate, punctures obscured by tessellation; lateral lobes of sternum 7 bifurcate, basal lobule with a few coarse teeth on margin (Figs. 5, 6); apex of gonocoxite with two or three barbulate setae ..... subg. *Deranchylaeus* Bridwell (part)
8. All terga with abundant erect, fine, white hairs, these becoming longer and denser caudad (Fig. 18); clypeus

black or with median yellow stripe which tapers toward apex, but not reaching apical margin; terga 1 and 2 coarsely, closely punctate; basal lobule of sternum 7 short, without lateral teeth ..... *Cornylaeus,* new subgenus

– Discs of terga 1–3 usually with few or no erect hairs (if any present, they are short, separated by their own lengths or more and often dark); clypeal marks variable, but rarely as described above, clypeus usually entirely pale; terga 1 and 2 often without evident punctures; basal lobule of sternum 7 often elongate and always laterally dentate .....subg. *Deranchylaeus* Bridwell (part)

9. Mandibular apex bi- or tridentate, dorsal border usually not flattened and expanded, but if flattened, conspicuously punctate and only slightly shiny *and* pronotal collar sharply marginate in middle; clypeal marks various, often greatly reduced or absent; tergal fasciae and punctation various 10

– Mandibular apex bidentate, dorsal border flattened and expanded, shiny and impunctate (Fig. 12); lateral face mark full, clypeus black or with median stripe, pronotal stripe complete; first tergum conspicuously punctate; terga 1 and 2 with apical pubescent fasciae, broadly interrupted in middle; pronotal collar not marginate in middle ..... *Cornylaeus,* new subgenus

10. Clypeus flat preapically without conspicuous transverse or quadrate impression 11

– Clypeus with pronounced median, preapical quadrate or somewhat transverse depression ....subg. *Deranchylaeus* Bridwell (part)

11. Clypeus coarsely, closely punctate; pronotum sharply marginate in middle; lateral face mark complete, but not extending above level of antennal socket; legs and clypeus often ferruginous ..... *Alfkenylaeus,* new subgenus

– Clypeus usually finely and sparsely punctate; pronotum usually rounded in middle; if clypeus and pronotum as above, *then* lateral face mark absent or reduced to narrow stripe along eye margin; legs and clypeus not ferruginous, *or,* if ferruginous, then clypeus finely punctate and lateral face mark absent ....subg. *Deranchylaeus* Bridwell (part)

Hylaeus Fabricius

Hylaeus Fabricius, 1793:302. Type-species: *Apis annulata* Linnaeus, 1758; designation of Latreille, 1810.

DIAGNOSIS

Body mostly dull black, with or without pale marks on head and thorax; frontal shield present; mandibles stout, bi- or tridentate; at least head and thorax usually conspicuously punctate.

DESCRIPTION

(1) Mandible stout, bidentate in male, bi- or tridentate in female. (2) Labral tubercle, when present, small, midbasal, often depressed along center. (3) Tentorial pit usually at midpoint of clypeal length. (4) First flagellar segment, and often second as well, short and transverse. (5) Frontal shield present and sharply margined. (6) Lateral carina of propodeum usually present, oblique carina usually absent in our fauna. (7) Sulcus of first tergum long or short. (8) Gradulus of second tergum gently arched, usually evanescent laterad. (9) Third tergum of male without sublateral pubescent fovea. (10) Male sternum 7 normally with distinct basal and apical lobules. (11) Male sternum 8 usually with distal process long and slender; dorsal tubercle usually near base of distal process. (12) Male gonocoxite usually broad and not extending much beyond penis valves, but may be elongate and slender.

DISCUSSION

Hylaeus is a virtually cosmopolitan genus with many species arrayed within numerous subgenera. The European species have been recently reviewed by Dathe (1980), and many of the Nearctic species by Snelling (1966a–c, 1968, 1970). The hylaeines of Australia are presently being revised by Houston (1975, 1981). The extensive Neotropical and Asian faunas are essentially unstudied.

The above description is drawn entirely from the species of the Ethiopian Region and will not apply, in all particulars, to *Hylaeus* from other Regions. Species are mostly small black bees with limited whitish or yellowish marks on the head and thorax, especially in the males. A few species have limited red marks, particularly on the clypeus and legs.

After removing some species to *Nothylaeus* and *Metylaeus,* Bridwell (1919) placed all remaining Ethiopian hylaeines in his subgenus *Deranchylaeus.* Many of those included were known to Bridwell only from their original descriptions. It is not surprising, therefore, to find that some will not fit within Bridwell's scheme. For these species, new subgeneric or generic names are proposed. At the same time, Bridwell's genus *Metylaeus* is treated as a subgenus of *Hylaeus.*

Most species still remain in *Deranchylaeus,* a large and diverse subgenus, apparently restricted to the Ethiopian Region. *Deranchylaeus* may be derived from the large Holarctic subgenus *Prosopis,* or at least from a similar stock. However, until the taxa within *Hylaeus* can be studied on a worldwide basis, this must be presumption only.

Subgenus *Deranchylaeus* Bridwell

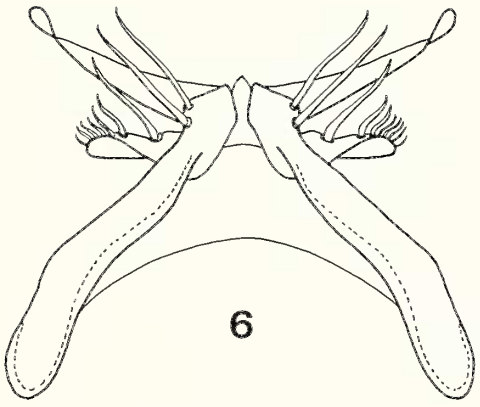
Hylaeus subg. *Deranchylaeus* Bridwell, 1919:136–137. Type-species: *Prosopis curvicarinata* Cameron, 1905; original designation.

DIAGNOSIS

Mandibles short, broad, bi- or tridentate at apex; preoccipital carina absent; mesepisternum not carinate between anterior and lateral faces; scutellum and metanotum unmodified; male

→

Figures 6–11. Sterna 7 and 8, genital capsule (right half dorsal, left half ventral views) of: **6–8,** *H.* (*Deranchylaeus*) sp., scale line = 0.25 mm; **9–11,** *H.* (*Nothylaeus*) *heraldicus,* scale line = 0.50 mm.



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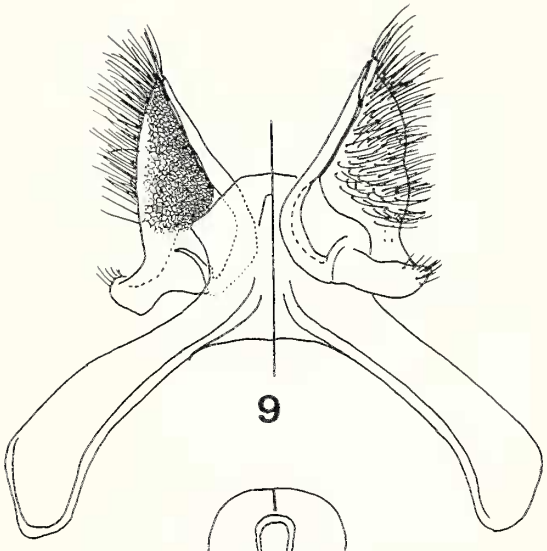

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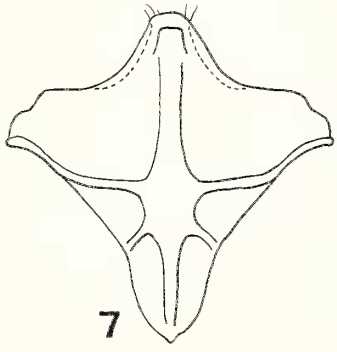

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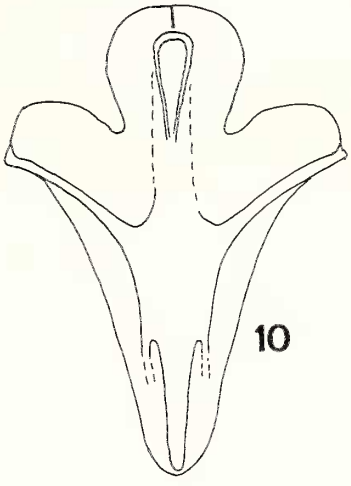

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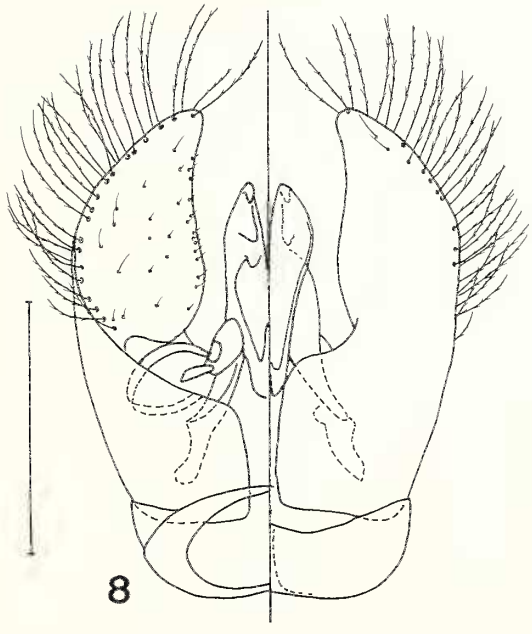

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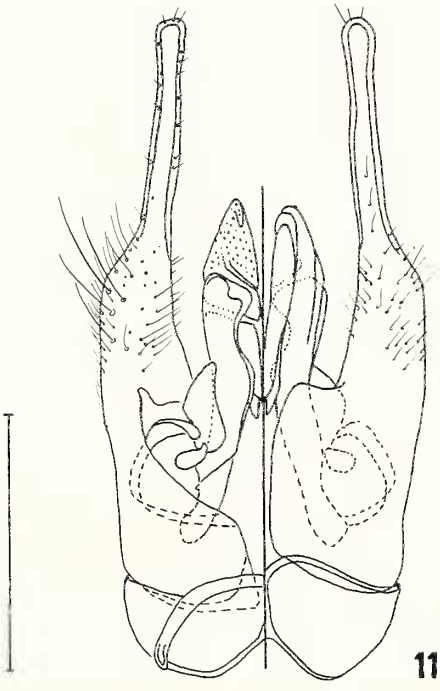

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sternum 7 with lateral margin of basal lobule dentate; male gonocoxite stout, ending at about level of penis valves.

DESCRIPTION

(1) Mandible broad, usually bidentate, but tridentate in some females. (2) Clypeus flat or with distinct preapical depression; punctures minute to fine, usually sparse but may be close. (3) Preoccipital carina or ridge absent. (4) Pronotal collar usually rounded on dorsal surface, rarely somewhat marginate. (5) Mesepisternum without carina between anterior and lateral faces. (6) Lateral carina of propodeum usually present, oblique carina usually absent. (7) Sulcus of tergum 1 one-third or less as long as basal face. Tergum 2 with punctiform lateral fovea. Male sterna 2 and 3 usually not tuberculate. (10) Male sternum 7 with teeth along lateral margin of basal lobule. (11) Male gonocoxite broad, blunt, extending little, if any, beyond level of apex of penis valves.

Dorsal border of mandible usually not flattened, but if so, expanded area is densely punctate and only slightly shiny; scutellum and metanotum simple.

DISCUSSION

This is the largest group of hylaeines in the Ethiopian Region. Many of the species appear to be common and widespread. These wide-ranging species are subject to considerable variation in the intensity and distribution of pale face marks, with many trivial forms named on the basis of slight color differences. There are 10 clearly recognizable species groups.

LIST OF INCLUDED SPECIES NAMES

absonulus Cockerell, 1936a
abjunctus Cockerell, 1936a
alfkeni (Friese, 1913)
atriceps (Friese, 1911)
bequaertianus Bridwell, 1919
capicola (Alfken, 1914)
clavigerus Cockerell, 1936b
corpana (Warncke, 1972)
curvicarinatus (Cameron, 1905)
dominae Cockerell, 1936a
dregei (Strand, 1912)
extensicornis Cockerell, 1936a
flaviscutum (Alfken, 1914)
gabonica (Vachal, 1899)
graafi Cockerell, 1936a
haygoodi Bridwell, 1919
immarginatus (Alfken, 1914)
kasindensis Cockerell, 1936a
krebsianus (Strand, 1912)
lemuriae (Benoist, 1946)*
leucolippa (Friese, 1913)
lightfooti Bridwell, 1919
lineaticeps (Friese, 1913)
longula (Friese, 1913)
major (Strand, 1912)
malagassa (Benoist, 1946)*
melanosomus Cockerell, 1920
ogilviei Cockerell, 1936
perater Cockerell, 1936a
perdensus Cockerell, 1936a
promontorii Meade-Waldo, 1923
punctifrons Cockerell, 1936a
punctiferus Cockerell, 1936a
reditus Cockerell, 1936a
rhodognathus Cockerell, 1936a
robertiana (Cameron, 1906)
rugipunctus (Alfken, 1914)
sanctus Cockerell, 1936a
simplex (Bingham, 1912)
simplior Meade-Waldo, 1923
simulans Cockerell, 1942
stictifrons (Cockerell, 1936b)
sublucens Cockerell, 1936a
subreditus Cockerell, 1942
tenuis (Alfken, 1914)
tinctulus Cockerell, 1932
varians Cockerell, 1936a
vau Cockerell, 1936a
xanthostoma (Alfken, 1914)

* Known only from Madagascar.

Cornylaeus, new subgenus

Type-species: *Prosopis aterrima* Friese, 1911.

DIAGNOSIS

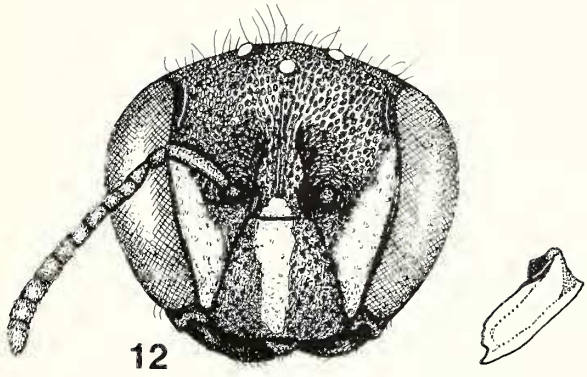
Mandible bidentate, that of female with upper margin flattened, expanded, shiny and impunctate; mesepisternum not carinate between anterior and lateral faces; scutellum and metanotum simple; macula of pronotal collar complete; male with abundant fully erect hairs on discs of abdominal segments; male sternum 7 without teeth on lateral margin of basal lobule; male gonocoxite stout, ending at about level of apex of aedeagus.

DESCRIPTION

(1) Mandible bidentate at apex, upper border flattened and expanded in female, expanded portion shiny and impunctate. (2) Clypeus flat, without preapical impression. (3) Preoccipital ridge or carina absent. (4) Pronotal collar rounded above. (5) Mesepisternum without carina between anterior and lateral faces. (6) Oblique carina absent, lateral carina present in its lower half only. (7) Sulcus of tergum 1 about one-third as long as basal face. (8) Tergum 2 with punctiform lateral fovea. (9) Male sternum 3 conspicuously tuberculate, or not.

→

Figures 12-17. Frontal view of head of female and male of: **12-13,** *H.* (*Cornylaeus*) *aterrimus;* **14-15,** *H.* (*Cornylaeus*) *proteae*; **16-17,** *Nothylaeus heraldicus.* Scale line = 1.00 mm. Figures by R.A. DeNicola.



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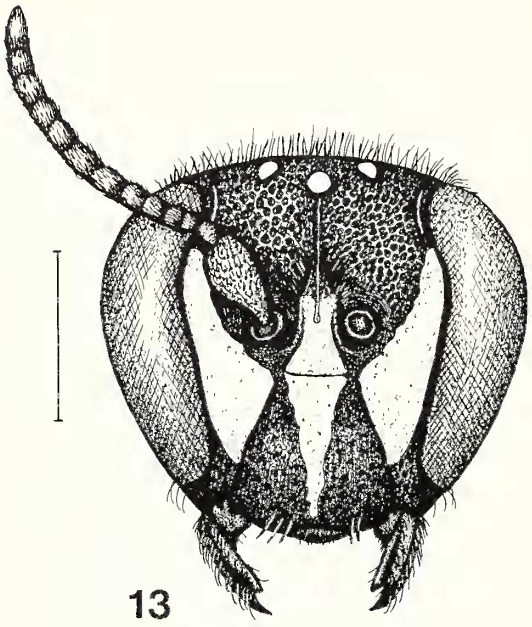

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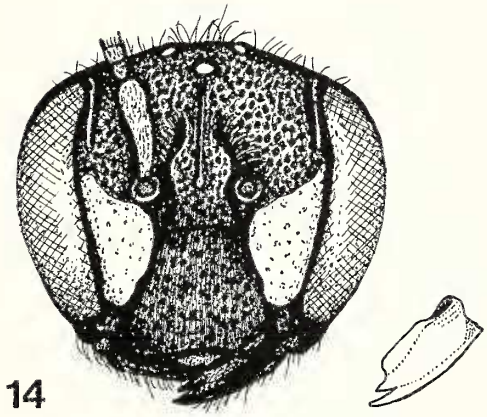

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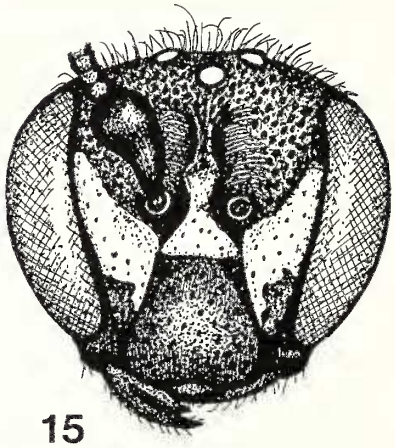

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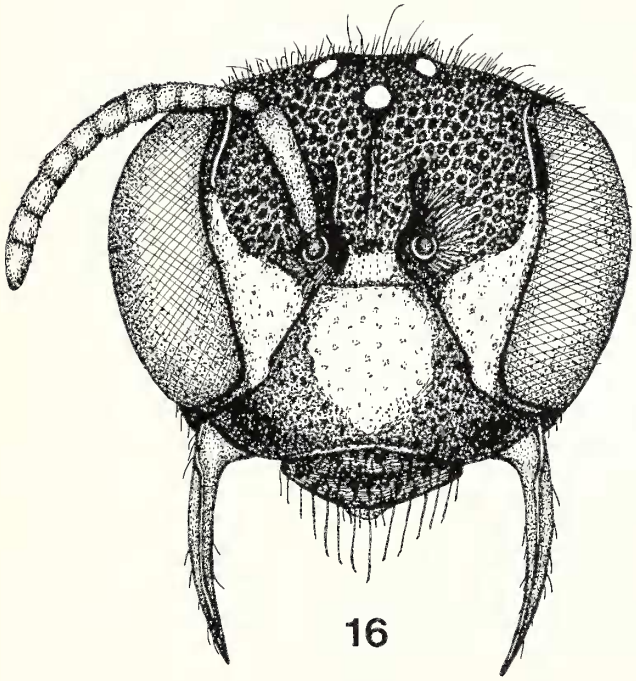

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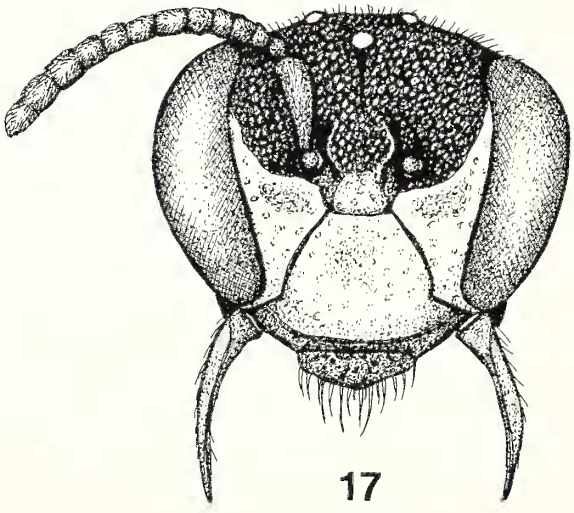

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(10) Male sternum 7 without teeth along lateral margin of basal lobule. (11) Male gonocoxite broad, blunt, ending slightly beyond apex of penis valves.

Male labrum without median tubercle; IAD about 0.66 × COD; subantennal sutures about as long as ASD; upper end of female facial fovea slightly separated from inner eye margin; first flagellar segment slightly broader than long, longer than second segment; male mesepisternum with longitudinal tubercle below.

DISCUSSION

This subgenus is proposed for two apparently uncommon, rather large and robust forms. Although Bridwell (1919) included the type species in his subgenus *Deranchylaeus,* there is no evidence that he actually saw any specimens. Males are easily recognizable by the presence of abundant long erect hairs on the discs of the abdominal segments. In most males, too, there are conspicuous tubercles on the third sternum.

The males of at least one species, *H. aterrimus,* are polymorphic, exhibiting a wide range of variation in the development of the tubercles of sternum three. In this species, tubercles may also be present on the third tergum. In general, degree of development of the tubercles is correlated with body size, but there is no consistency. So far as known, males of *H. proteae* always possess a large, somewhat asymmetrical process on the third sternum, but too few specimens have been seen for there to be any certainty about this.

Females of *Cornylaeus* are less easily recognized, but the mandibular structure is unlike that of any *Deranchylaeus.* In addition, the basal face of the first tergum has numerous fully erect white hairs, usually long and conspicuous. These hairs are subject to wear and are sometimes absent. A few *Deranchylaeus* do possess hairs on the basal face of the first tergum but do not have the mandibular structure characteristic of *Cornylaeus.*

ETYMOLOGY

The subgenerie name is derived by combining the Latin word for horn, or tubercle (*cornus*), with the name *Hylaeus.*

SYNONYMIC LIST OF SPECIES

aterrimus (Friese)
  =*quinquedentata* Friese
  =*pondonis* Cockerell, NEW SYNONYMY
proteae Cockerell

KEY TO SPECIES OF *CORNYLAEUS*

1. Female, antenna 12-segmented 2
– Male, antenna 13-segmented 3
2. Clypeus with median stripe; supraclypeal area maculate ..... *aterrimus* (Friese)
– Clypeus and supraclypeal area black .. *proteae* Cockerell
3. Clypeus with longitudinal stripe; metatibia with basal pale mark; tergum 3 often with lateral tubercles; sternum 3 tuberculate or not; scape longer than broad ..... *aterrimus* (Friese)
– Clypeus black or with a minute preapical median spot; metatibia wholly dark; tergum 3 always without lateral tubercles; sternum 3 with a large median swelling; scape rotund, as broad as long ..... *proteae* (Cockerell)

Hylaeus (*Cornylaeus*) *aterrimus* (Friese)

Figures 12–13, 18–21

Prosopis aterrima Friese, 1911:120. ♂, ♀. SOUTH AFRICA: Shilouvane, N. Transvaal, Feb. (♀), Oct. (♂) (MNHU) [examined].

Prosopis quinquedentata Friese, 1911:132. ♂. SOUTH AFRICA: Shilouvane, N. Transvaal (*Junod*) (MNHU) [examined].

Hylaeus pondonis Cockerell, 1942:10. ♂. SOUTH AFRICA: Port St. John, Pondoland, Oct. 1923 (*R.E. Turner*) (BMNH) [examined]. NEW SYNONYMY.

Three cotypes are available from MNHU. Of these, the male, which agrees with Friese's original description, is selected as lectotype. Of the two females, the smaller is designated allolectotype and the larger paralectotype; all specimens are in MNHU.

Alfken (1914) first recognized that *H. quinquedentata* was a junior synonym of *H. aterrima.* I have examined the type and concur. Cockerell's *H. pondonis* is based on a male lacking tubercles on the third tergum. It falls well within the range of variation of *H. aterrimus,* as I understand the species.

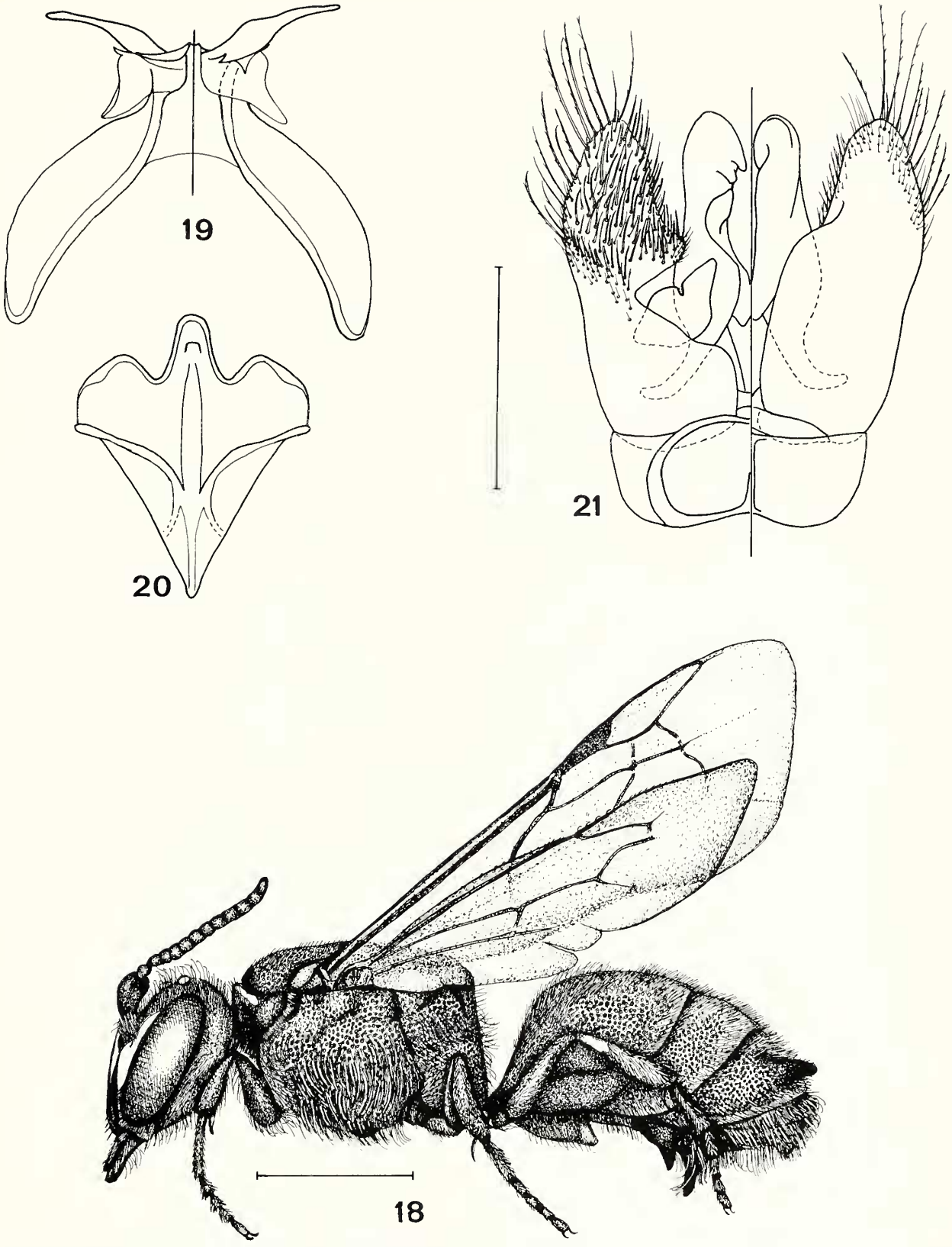
MATERIAL EXAMINED

CONGO REPUBLIC: 2♂♂, 10 mi. S Kapona, 1570 m elev., 13 Jan. 1958 (*E.S. Ross & R.E. Leech;* CAS). ZIMBABWE: 1♀, 1♂, Salisbury, no date (*D. Dodds;* SAM, AMNH); 1♂, Burnside, Bulawayo, 28 Sept. 1952 (*no name;* SAM); 2♂♂, Bulawayo, 24 Apr. 1916 (*no name;* SAM); 1♀, Bulawayo, Apr. 1916 (*no name;* SAM); 1♀, Bulawayo, 29 Apr. 1916 (*no name;* SAM); 1♂, Bulawayo, 6 June 1925 (*R.H.R. Stevenson;* SAM); 1♂, Bulawayo, 7 Sept. 1954 (*no name;* SAM); 1♀, Hope Fountain, 7 May 1916 (*no name;* SAM); 1♂, Salisbury, Mar. 1906 (*G.A.K. Marshall;* BMNH); 2♂♂, Umtali Heights, 1420 m elev., 13 Mar. 1958 (*E.S. Ross & R.E. Leech;* CAS). SOUTH AFRICA: 1♀, Port St. John, Pondoland, 1–17 Mar. 1924 (*R.E. Turner;* BMNH); 1♂, same locality and collector, Jan. 1924 (BMNH); 1♀, same locality and collector, Oct. 1923 (BMNH); 2♂♂, Hilton, Natal, 2 Aug. 1966 (*J.S. Taylor;* USNM), on *Protaea;* 2♂♂, Hellabella, 2200 ft. elev., 12 mi. SW Richmond, 13 Jan. 1967 (*C.D. Michener & D.J. Brothers;* UKAN); 1♂, 2♀♀, Shilouvane, Transvaal, no date (*Junod;* MNHU, cotypes of *P. aterrima*); 1♂, same data (MNHU, type of *P. quinquedentata*); 1♂, Wolkberg, Transvaal, 13 Apr. 1974 (*R.H. Watmough;* PRET); 1♀, Long Tom Pass, 25°07′S, 30°35′E, Transvaal, Jan. 1977 (*E.F. Whitehead;* PRET), "yellow bowl trap."

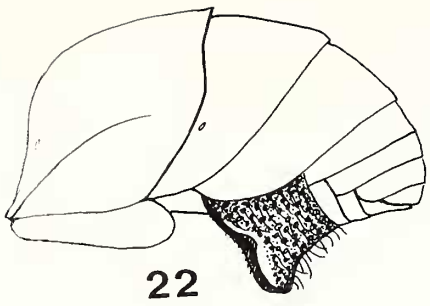
Hylaeus (*Cornylaeus*) *proteae* Cockerell

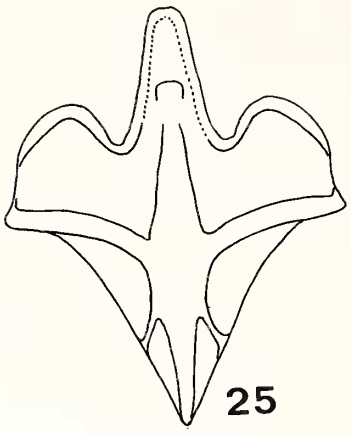
Figures 14–15, 22–26

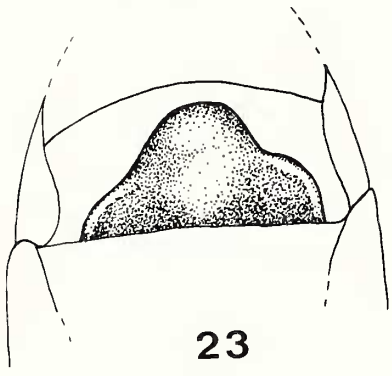
Hylaeus proteae Cockerell, 1942:11–12. ♂. SOUTH AFRI-

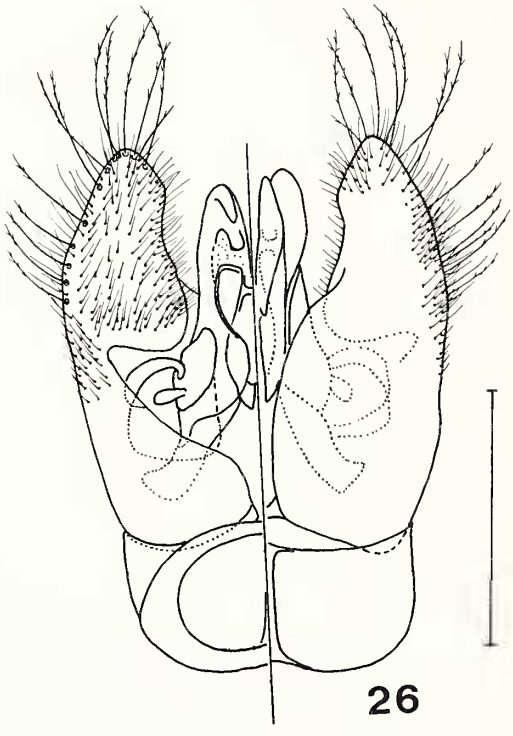


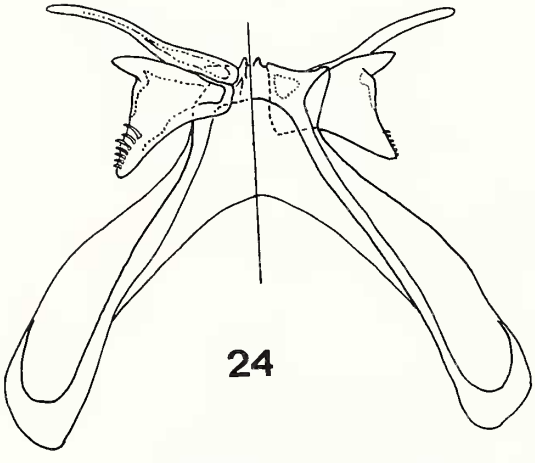
Figures 18–21. Male, *H.* (*Cornylaeus*) *aterrimus:* **18,** lateral habitus (scale line = 2.00 mm); **19–21,** sterna 7 and 8, genitalic capsule (scale line = 0.50 mm). Figure 18 by R.A. DeNicola.











Figures 22–26. Male, *H.* (*Cornylaeus*) *proteae:* **22,** abdomen, lateral view; **23,** sternum 3, ventral view; **24–26,** sterna 7 and 8 genitalic capsule (scale line = 0.50 mm, 24–26 only). Figures 22 and 23 by R.A. DeNicola.

CA: Port St. John, Pondoland, Oct. 1923 (*R.E.Turner*) (BMNH) [examined].

The male of *H. proteae* is easily recognized by the combination of black clypeus, externally globose scape, densely pubescent abdomen and enormous tubercle on the third sternum. In the female the cutting margin of the mandible is oblique behind the second tooth, the blade is broad, the clypeus is black, and the pronotal collar has a continuous yellow band.

MATERIAL EXAMINED

ZIMBABWE: 1♀, Vumba Mts., 27 Feb. 1938 (*no name;* SAM); 2♀♀, same locality, 12 Aug. 1956 (*no name;* SAM). SOUTH AFRICA: 2♀♀, 4♂♂, Port St. John, Pondoland, Oct. 1923 (*R.E.*

Turner; BMNH, SAM, including 2 cotype ♂♂), on *Protaea;* 1♀, Magaliesberg, Tonguani Kloof, Transvaal, 2 Feb. 1975 (*P.H. Watmough;* PRET), in "open grassland."

Alfkenylaeus, new subgenus

Type-species: *Hylaeus namaquensis* Cockerell, 1942.

DIAGNOSIS

Male with gonocoxite abruptly narrowed over distal one-third or more; seventh sternum with apical lobule virtually absent, basal lobule strap-like and without teeth. Female mandible weakly tridentate; gradulus of second tergum weakly curved, deflected at side; pregradulus of third sternum elevated and extended caudad in middle. In both sexes, head, thorax (except propodeum in one species) and first two terga coarsely and closely punctate; pronotal collar carinate.

DESCRIPTION

(1) Male mandible bidentate at apex, that of female weakly tridentate. (2) Clypeus gently arched, without preapical impression. (3) Occipital margin acute, but preoccipital ridge absent. (4) Pronotal collar carinate on its dorsum. (5) Mesepisternum without carina between anterior and lateral faces. (6) Oblique and lateral propodeal carinae absent. (7) Sulcus of tergum 1 broad at base, at least half as long as basal face, depressed and marginate. (8) Tergum 2 with broadly oval lateral fovea; gradulus gently bowed in middle, weakly deflected at side. (9) Male sternum 3 with or without transverse swelling. (10) Male sternum 7 with distal lobules reduced or absent, basal lobules strap-like and without teeth (Figs. 29, 34, 38). Male gonocoxite abruptly narrowed in distal one-third or more, ending much beyond apex of penis valves (Figs. 31, 36, 40), usually protruding from genital opening in dry specimens.

IAD subequal to (*H. namaquensis*) or much less than (*H. acariphorus* and *H. psaenythioides*) COD; frontal shield high, narrow (more so in males), sharply marginate and reflexed at sides; female facial fovea ending nearer eye than ocellus; first two flagellar segments transverse, subequal in length or second slightly longer; pregradulus of tergum 3 elevated and narrowly, triangularly extended distad in middle; distal process of male sternum 8 elongate, narrow, and slightly broadened at apex (Figs. 30, 35, 39).

ETYMOLOGY

This subgenus is dedicated to J.D. Alfken whose early work on *Hylaeus* has contributed greatly to our understanding of the Old World forms.

DISCUSSION

This subgenus is proposed to accommodate a few coarsely punctate species of distinctive habitus. The unusually large basal sulcus of the first tergum is apparently a modification to accommodate the mites often found on these bees. The elevated pregradular area of the third segment may be similarly adaptive.

The following key to species of *Alfkenylaeus* includes both sexes of *H. arnoldi* (Friese), although this bee does not belong to this subgenus. In the key to genera and subgenera, however, *H. arnoldi* will come out with the *Alfkenylaeus* species and so it seems most convenient to include the species here; *H. arnoldi* is discussed following treatment of the species of *Alfkenylaeus.*

SYNONYMIC LIST OF SPECIES

acariphorus, new species
infulatus, new species
namaquensis Cockerell
psaenythioides, new species

KEY TO SPECIES OF *ALFKENYLAEUS*

1. Female, antenna 12-segmented 2
– Male, antenna 13-segmented 6
2. Apical protarsal segment broadest at apex, evenly narrowed toward base; bristles of protarsus slightly or not at all flattened, their apices acuminate; terga 1–2 coarsely, closely punctate 3
– Apical protarsal segment narrowest basad, broadened to basal one-third, evenly narrowed apicad; protarsal bristles strongly flattened, apices bluntly rounded; second tergum either without evident punctures or punctures fine and obscure ..... *arnoldi* (Alfken)
3. Clypeus entirely black; legs brownish, metatibia with basal one-third more or less yellowish; terga 2–5 with conspicuous preapical pubescent fasciae 4
– Clypeus largely ferruginous; legs entirely ferruginous; terga 3–5 with short, inconspicuous hairs, a little denser on side of first and second segments ..... *acariphorus,* new species
4. Punctures along middle of clypeus fine to moderate, separated by one-half, or more, puncture diameters; pronotal collar maculate; hairs on basal face of tergum 1 long, fully erect, and continuous across summit ..... *namaquensis* Cockerell
– Punctures along middle of clypeus coarse and contiguous to subcontiguous; pronotal collar immaculate; hairs of basal face of tergum 1 subappressed and limited to margin of sulcus, none across summit .. *infulatus,* new species
5. Clypeus entirely pale or pale with apical area ferruginous; lateral face mark filling most of space between eye and clypeus; thorax often dull, punctural interspaces densely tessellate 6
– Clypeus black on basal two-thirds, apical one-third ferruginous; transverse stripe between antennal sockets and clypeal base yellowish; thoracic interspaces shiny, polished on dorsum ..... *psaenythioides,* new species
6. Sternum 3 flat, without mediobasal glabrous swelling; base of metatibia and entire metatarsus whitish 7
– Sternum 3 with low, semicircular glabrous swelling at base; legs wholly ferruginous .. *acariphorus,* new species

7. Lateral face mark ending at level of upper margin of antennal sockets; scape maculate beneath; third and following terga without preapical pubescent fascia .... *arnoldi* (Alfken)

– Lateral face marking ending midway between antennal sockets and top of eye; scape immaculate beneath; tergum 3, at least, with preapical pubescent fascia .... *namaquensis* Cockerell

Hylaeus (*Alfkenylaeus*) *acariphorus*, new species

Figures 27–31

DIAGNOSIS

Male: Sternum 3 with large, flat, glabrous swelling in middle of base; legs wholly ferruginous; clypeus yellow and ferruginous; interspaces of frons and thoracic dorsum slightly shiny, distinctly tessellate. Female: Terga 2 and 3 with pubescent fasciae, interrupted in middle; interspaces of frons and thoracic dorsum dull, densely tessellate; clypeus red and black, legs wholly red.

DESCRIPTION

MALE (HOLOTYPE). Measurements. HL 1.74; HW 1.97; SL 0.74; WL 4.9; TL 7.3 mm.

Head. Broad, HW 1.1 × HL; scape moderately long, 2.3 × longer than wide, SL 0.42 × HL. Eyes strongly convergent below, UFW 1.53 × LFW. Clypeus slightly longer than wide at apex, sides regularly divergent to maximum width, BCW 0.48 × CW; BCW:COD:CAD:ASD:IAD = 10:10:8:6:5. OD:IOD:OOD = 5:12:7.5. Frontal shield very narrow between antennal sockets, sides reflexed, transparent. First flagellar segment shorter than either pedicel or second flagellar segment. Entire face coarsely punctate, punctures about 0.06 mm diam.; interspaces in maculate areas slightly shiny and lightly tessellate, in immaculate areas dull, closely tessellate.

Thorax. Pronotal collar sharply carinate in front, carina extending laterad to base of pronotal lobe; humeral ridge present. Mesoscutum 1.35× wider than long. Scutellum flat, about 0.37 × length of scutum. Metanotum flat, sloping, about half as long as scutellum. Basal face of propodeum gently curved into declivitous face; basal triangle sharply marginate. Sides of pronotal collar coarsely, closely punctate; scutum, scutellum, pleura coarsely, almost contiguously punctate; sides and stigmatal area of propodeum closely punctate, punctures about one-half size of mesopleural punctures; basal triangle rugosoreticulate. Integument barely shiny, interpunctural spaces lightly to densely tessellate.

Abdomen. Tergum 1, from above, about 1.4× wider than long, basal sulcus sharply margined, deep, over half length of basal face, apical band broad, a little depressed at sides; apical band about twice as wide on second segment, strongly depressed at sides; first two terga coarsely, closely punctate; sternum 3 with large, flat, semicircular, mediobasal, glabrous tumescence occupying about ⅓ of segment; sternum 7 without hairs on apical lobes; sternum 8 abruptly broadened preapically, apex angulate; gonocoxite evenly narrowed, apex slightly broadened.

Pilosity. Clypeus with numerous short, erect hairs; sides and front of face with hairs conspicuously longer, weakly plumose, especially around antennal insertions; genal hairs sparse, mostly reclinate. Thoracic dorsum with short, sparse erect hairs, except around wing bases and sides of scutellum and metanotum where they are much longer; pleura with hairs short, sparse above, becoming longer ventrad; propodeal hairs sparse, moderately long. Tergum 1 with a few short simple hairs near base and with fine, appressed plumose hairs on sides of apical depression; tergum 2 with sparse simple, erect hairs and dense, plumose, appressed hairs in apical depression, narrowly interrupted in middle; remaining terga with sparse simple hairs of variable length, appressed to fully erect; sterna with scattered, erect, weakly plumose hairs, more abundant caudad.

Color. Black; mandible, lower sides of face, apical third of elypeus (except median stripe), scape, flagellum, and legs light ferruginous; minute basal spot on mandible, basal third of clypeus and broad median intrusion into apical two-thirds, supraclypeal area, sides of face to slightly above level of antennal sockets, all light yellowish. Upper side of scape and flagellum brownish. Tegula testaceous. Wings clear, veins and stigma brownish.

FEMALE (ALLOTYPE). Measurements. HL 1.89; HW 2.05; SL 0.37; WL 4.8; TL 7.8.

Head. Broad, HW 1.08 × HL; scape short, SL 0.19 × HL. Eyes moderately convergent below, UFW 1.41 × LFW. Clypeal length and apical width subequal; BCW 0.54 × CW; BCW:COD:CAD:ASD:IAD = 13:12:6:5:7. OD:IOD:OOD = 5:12.5:9. Mandible broad, tridentate, inner tooth small. Clypeus coarsely and elosely punctate, frons a little more coarsely punctate; interspaces dull, densely tessellate. Facial fovea ending about ⅓ of distance between eye and ocellus.

Thorax. As in male, but pleural punctures a little finer, no sparser above than below.

Abdomen. Similar to that of male, with usual sexual differences; no tumescence on sternum 3.

Pilosity. Much as in male, but a little denser in all areas.

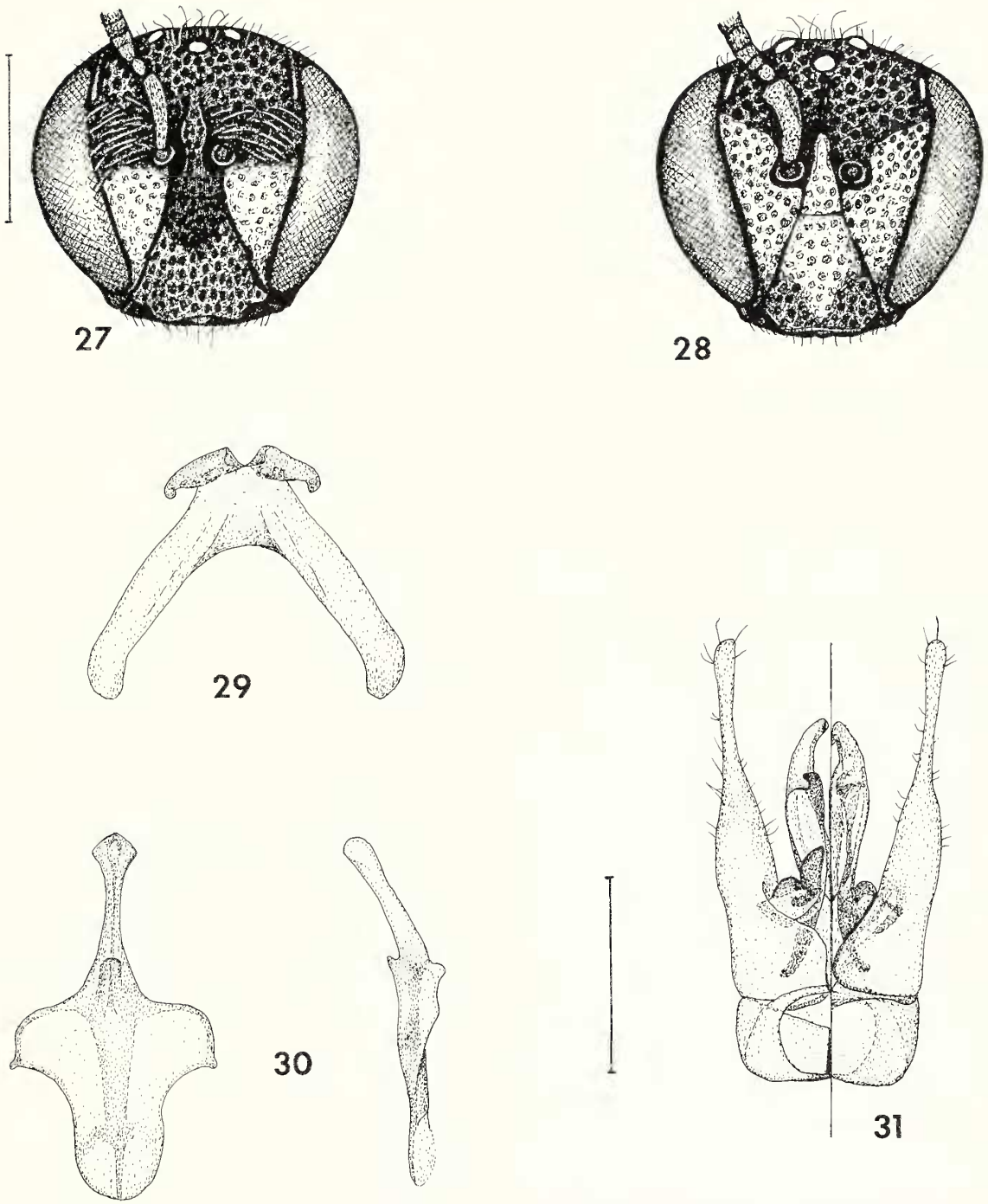
Color. Black; lower sides of face, mandible, clypeus except black basal third, under side of scape and flagellum, legs, all ferruginous. Side of face with broad yellowish macula ending abruptly above at level of antennal sockets. Upper side of scape and flagellum brownish. Tegula translucent brownish. Wings clear, veins and stigma light brown. First tergum with reddish areas laterally and basally.

TYPE MATERIAL

Holotype male and allotype: Khami, ZIMBABWE, 11 Dec. 1932 (*no name*), from collection of the National Museum of Zimbabwe, deposited in SAM: Paratype: 1♀, Pretoria, Transvaal, SOUTH AFRICA, 9 Jan. 1980 (*S.J. van Tonder;* PRET).

ETYMOLOGY

Latin, *acarus* (mite) plus the suffix *-phorus* (to bear), in reference to the presence of a mite-bearing chamber at the base of the first tergum.



Figures 27-31. *H. (Alfkenylaeus) acariphorus:* **27-28,** frontal view of head of female and male (scale line = 1.00 mm); **29-31,** male sterna 7 and 8, genitalic capsule (scale line = 0.50 mm). Figures by R.A. DeNicola.

DISCUSSION

This species is easily recognized by the diagnostic characters given above. The Zimbabwe specimens possess hypophal mites in the modified basal sulcus of the first tergum.

Two additional females, which may be this species, have been seen. Both are from Mombasa, KENYA, collected 12 Dec. 1982 by T.L. and R.T. Griswold, and are in Mr. Griswold's collection. They differ from the allotype in having the first tergum ferruginous rather than black. The punctures laterad on the metanotum are separated by about one-half a puncture diameter, the basal area of the propodeum is very weakly rugulose and the entire propodeum is matt. In one

specimen the punctures of the second tergum are separated by up to a puncture diameter and the punctures, instead of being deep and sharply defined, slope upward to the tergal surface along their posterior portions.

Possibly these represent another species, but this is uncertain in the absence of males, and because there are so few specimens that I have no idea of the limits of infraspecific variation. For the time being it seems best to tentatively assign these two Kenyan specimens to *H. acariphorus*. One of these females has hypophal mites in the sulcus of the first tergum.

Hylaeus (*Alfkenylaeus*) *infulatus*, new species

DIAGNOSIS

Female only: Terga 1–5 with complete apical pubescent fasciae; clypeus immaculate and coarsely, contiguously to subcontiguously punctate in middle. Male unknown.

DESCRIPTION

FEMALE (HOLOTYPE). Measurements. HW 1.84; HL 1.71; SL 0.45; WL 4.4; TL 7.0 mm. Paratype: HW 1.87; HL 1.74; SL 0.44; WL 4.3; TL 6.3 mm.

Head. Broad, HW 1.08 × HL; scape moderately long, SL 0.26 × HL. Eyes moderately convergent below, UFW 1.45 × LFW. Clypeus about as long as broad, sides regularly divergent to broadest point, BCW 0.58 × CW; BCW:COD:CAD:ASD:IAD = 32:24:17:13:18. OD:IOD:OOD = 11:33:20. Frontal shield narrow, sides nearly straight and strongly convergent above. First flagellar segment transverse, slightly shorter than pedicel and about as long as second segment. Entire clypeus coarsely and contiguously to subcontiguously punctate, interspaces tessellate and moderately shiny, bottoms of punctures shiny. Remainder of front of head similar, but interspaces of frons and vertex shiny, becoming more distinctly tessellate in preoccipital area. Gena moderately shiny between contiguous moderate to coarse punctures.

Thorax. Pronotal collar sharply carinate across front, carina extending across front of lateral lobe. Mesoscutum about 1.6× broader than long. Scutellum flat, about 0.36 × length of mesoscutum. Metanotum, in profile, weakly convex, its dorsum on same level as scutellum, about one-half as long as scutellum. Basal face of propodeum sharply curved into declivitous face; basal triangle sharply marginate. Side of pronotal collar shiny between irregularly spaced fine punctures; mesoscutum moderately shiny between subcontiguous coarse punctures; scutellum similar but a little shinier and punctures distinctly more separated in middle; metanotum coarsely and subcontiguously punctate, interspaces moderately shiny. Mesopleuron moderately shiny between coarse, subcontiguous punctures; metapleuron slightly shiny between subcontiguous to close moderate punctures. Propodeal triangle dull, appearing almost granulose, and sharply reticulorugose; stigmatal area and side dull, moderately rugosopunctate; disc dull, finely rugosopunctate.

Abdomen. Tergum 1, in dorsal view, about 1.4× broader than long; basal sulcus extending above middle of anterior face; disc shiny between coarse, subcontiguous punctures; pregradulus of second tergum moderately shiny between subcontiguous to close, fine to moderate punctures; disc of tergum 2 moderately shiny between subcontiguous to close moderate to coarse punctures. Remaining terga moderately shiny and finely tessellate between close to sparse fine punctures.

Pilosity. Lower frons with conspicuous long, subappressed, plumose hairs near antennal sockets; pronotal collar with dense pubescent fascia; terga 1–5 with complete apical pubescent fasciae; tergum 1 without erect hairs across summit of anterior face.

Color. Black; antenna (lighter beneath), tegula and legs dark brownish. The following pale yellowish: large lateral face mark, filling area between clypeus and eye, ending at level of lower margin of antennal socket; small tegular spot; basal spot on protibia and larger spot on metatibia. Wings clear, veins and stigma brownish.

TYPE MATERIAL

Holotype female: Konkoyo, 22 km W Kebemer, SENEGAL, 4 Aug. 1979 (A. Pauly, #10) in GEMB. Paratype female: Dingasso, near Bobo, UPPER VOLTA, 28 Sept. 1979 (A. Pauly), on *Ziziphus mauritiana*, in LACM.

ETYMOLOGY

From Latin, adorned with a fillet or band, referring to the abdominal fasciae.

DISCUSSION

Only the two female specimens are known. The paratype is very similar to the holotype: HW 1.07 × HL; UFW 1.43 × LFW; BCW 0.59 × CW; BCW:COD:CAD:ASD:IAD = 33:23:16:13:21. OD:IOD:OOD = 10:34:22.

Although very similar to *H. namaquensis*, females of *H. infulatus* are more coarsely punctate; this is especially evident on the clypeus, as noted in the key. The male of *H. infulatus* is unknown but probably will run to *H. namaquensis* in the key above.

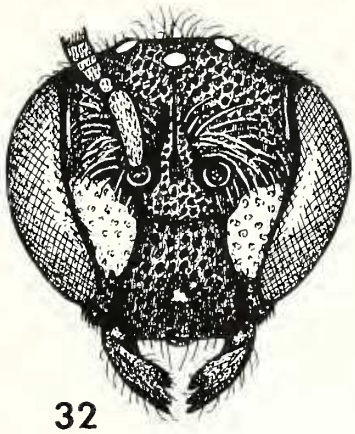
Hylaeus (*Alfkenylaeus*) *namaquensis* Cockerell

Figures 32–36

Hylaeus namaquensis Cockerell, 1942:12–13. ♀ ♂. SOUTH WEST AFRICA: Aug., Jan. 1930 (*R.E. Turner*) (BMNH) [examined].

DISCUSSION

This species is easily recognized, in the female by the combination of coarse punctation, extending to the second tergum, black clypeus, but with two lateral marks on face and pubescent fasciae on the second to fifth terga. The male has the lower half of the face yellow, the third sternum without a glabrous swelling, coarse punctation, and third to sixth terga with preapical pubescent fasciae; the fasciae of the fourth and



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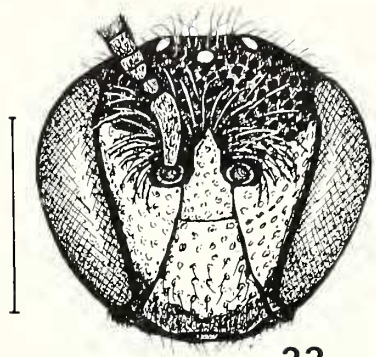

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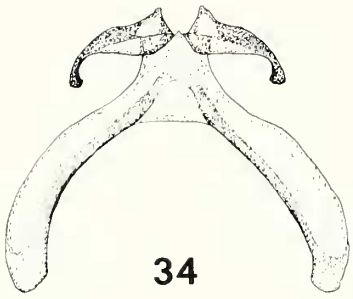

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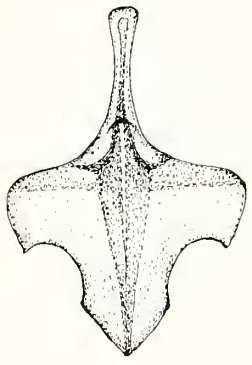

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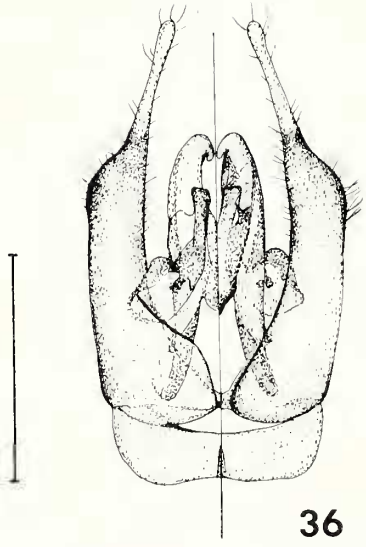

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Figures 32-36. *H. (Alfkenylaeus) namaquensis:* **32-33,** frontal view of head of female and male (scale line = 1.00 mm); **34-36,** male sterna 7 and 8 (ventral and lateral), genitalic capsule (scale line = 0.50 mm). Figures by R.A. DeNicola.

following segments may be absent due to abrasion. In this species the propodeum is sharply and densely tessellate, with fine, dense punctures; the basal triangle is rugosoreticulate at the base.

SOUTH WEST AFRICA: 10♂♂, 14♀♀, Aug., Jan. 1930 (*R.E. Turner;* BMNH, incl. cotypes); 1♂, Aug., Dec. 1929 (*R.E. Turner;* BMNH); 1♂, Windhoek, 12 Dec. 1933 (*J. Ogilvie;* BMNH); 1♂, Kaoko Otavi, Mar. 1926 (*no name;* SAM). One

additional female, surely mislabelled, is in the BMNH: Mahdatha, 60 mi. NE Mecca, ARABIA, Jan. 1945 (*B.P. Uvarov*).

Hylaeus (*Alfkenylaeus*) *psaenythioides*, new species

Figures 37–40

DIAGNOSIS

Male only: Face with transverse yellow band between inner orbits above clypeal base; punctation coarse. Female unknown.

DESCRIPTION

MALE (HOLOTYPE). Measurements. HL 1.68; HW 1.74; SL 0.68; WL 4.3; TL 6.5 mm.

Head. Broad, HW 1.06 × HL; scape moderately long, twice longer than wide, SL 0.40 × HL. Eyes strongly eonvergent below, UFW 1.62 × LFW. Clypeus slightly longer than wide at apex, sides evenly divergent from base; BCW 0.58 × CW; BCW:COD:CAD:ASD:IAD = 11:8:7:5:5:5. OD:IOD:OOD = 5:11:8. Cephalic punctures uniformly coarse, about 0.08 mm diam., often irregularly shaped, subcontiguous, interspaces polished; genal punctures a little smaller, interspaces less shiny, faintly tessellate.

Thorax. Pronotal collar with thin crest along anterior margin, reduced in middle, extended laterad along front of pronotal lobe nearly to lower margin of lobe; humeral ridge sharp. Mesoscutum about 1.3× wider than long. Scutellum flat, about 0.4 × length of scutum. Metanotum half as long as scutellum, anterior margin raised above posterior margin of scutellum, sloping to propodeal base. Basal area of propodeum oblique, evenly rounded onto posterior face; basal triangle almost entirely on basal face, sharply marginate; median groove deep and narrow. Entire thorax with coarse, subcontiguous punctures, those of mesoscutum about 0.06 mm diam., on mesopleura a little finer, propodeal punctures coarser above than below; interspaces smooth and shiny and dorsal areas, lightly tessellate and slightly shiny on pleura and sides of propodeum.

Abdomen. Enlarged basal sulcus about ¾ length of basal face of tergum 1; apical impunctate band of tergum 1 broad, sharply depressed; tergum 2 with apical impunctate band broader, more depressed, especially at sides; tergum 3 with apical impunctate band about as broad as on second, lightly depressed; sternum 3 with low, inconspicuous shiny swelling at base. First two terga coarsely punctate, punctures about 0.06 mm diam., interspaces smooth and shiny; remaining terga slightly shiny, transversely lineolate and with sparse, irregular, fine punctures; sterna shiny, very lightly tessellate and with scattered fine punctures which are coarser than on tergum 3. Sternum 7 with apical process expanded distally, apical margin rounded; sternum 8 with apical lobes narrow, apices reflexed, with a few setae along distal margin; gonocoxite evenly narrowed, apices not broadened.

Pilosity. Specimen apparently rubbed. Short simple hairs on front of head, a few longer, plumose hairs around antennal sockets, upper inner orbits, occipital margin, and head. Thoracic dorsum with short simple erect hairs, longer, plumose hairs at wing bases and sides of scutellum, metanotum, and stigmatal area; pronotal collar with band of dense, appressed, short plumose hairs and pronotal lobe margined by similar hairs; pleura with only short simple hairs (longer, plumose hairs may have once been present); propodeum with a few long, plumose hairs at sides of posterior face. Tergum 1 with moderately long simple hairs in sulcus, shorter simple hairs at sides and on disc; tergum 2 with similar, longer hairs on disc and sides; third and following terga with longer, more abundant simple hairs. Sterna with sparse, long, simple hairs. Tergum 1 with short, dense, appressed, plumose hairs on each side of apical margin.

Color. Black, abdomen obscurely reddish basally and ventrally; mandible, labrum, apical fourth of clypeus, lower sides of face, and most of legs reddish; underside of scape and flagellum dull yellowish red, dorsal surfaces brownish. Meso- and metafemora and tibiae mostly brownish. Tegula transparent brownish. Wings clear, veins light brown, stigma darker. Supraclypeal area and adjacent side of face light yellowish, so that face has transverse yellow band (Fig. 37).

TYPE MATERIAL

Holotype male: 13 mi. S Malindi, KENYA, 26 May 1967 (*C.D. Michener*), in UKAN.

ETYMOLOGY

This name was suggested by the presence of the transverse facial mark, as in the Neotropical bee genus *Psaenythia* (Andrenidae), to the name of which is added the suffix, *-oides,* resembling.

DISCUSSION

The species is easily recognized by the transverse facial mark, apparently unique among the hylaeines of the Ethiopian Region. The female possibly will be similarly marked, though it seems more likely that the supraclypeal area will be dark in this sex.

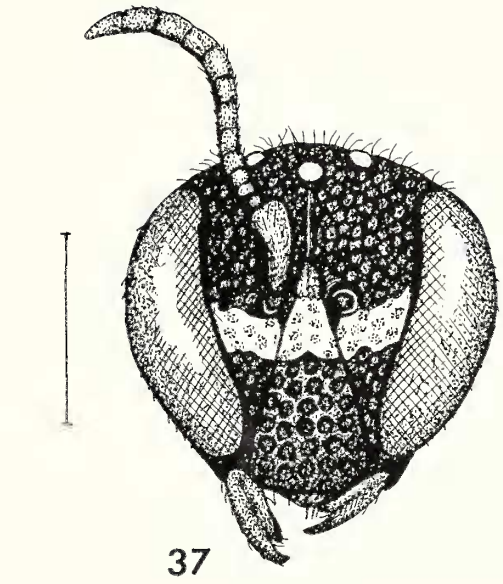
Subgenus uncertain

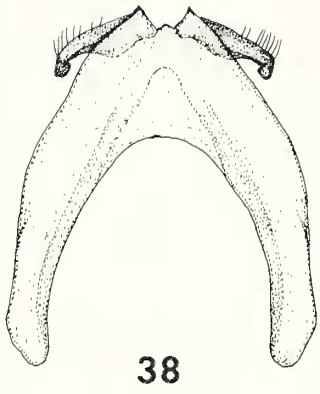
Although *Hylaeus arnoldi* will key to the subgenus *Alfkenylaeus* it is not, in my opinion, a member of that subgenus. In particular, I am impressed by the very different male sternum 8 (Fig. 44) and the shape of the male gonocoxite (Fig. 45). At present *H. arnoldi* does not fit within any of the existing subgenera. I am, however, presently unwilling to erect a monotypic subgenus for this species.

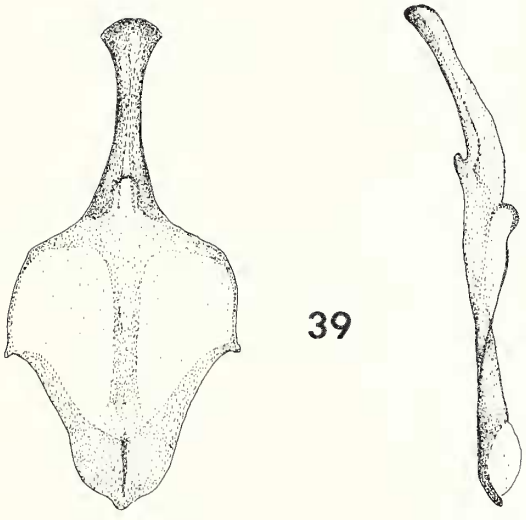
Hylaeus arnoldi (Friese)

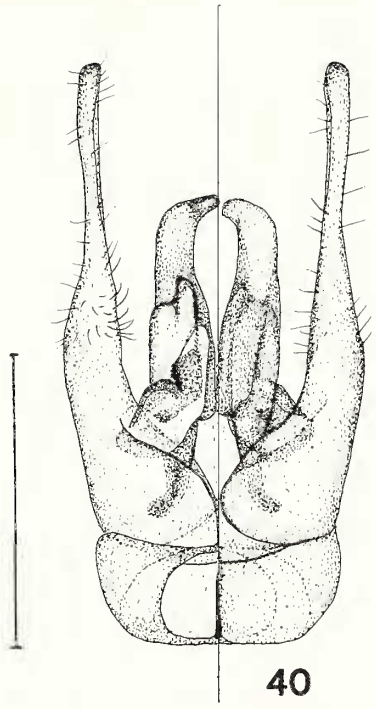
Figures 41–45

Prosopis arnoldi Friese, 1913:574. ♂. ZIMBABWE: Bulawayo, 28 Sept. 1912 (*G. Arnold*) (MNHU) [examined].









Figures 37-40. Male, *H. (Alfkenylaeus) psaenythioides:* **37,** frontal view of head (scale line = 1.00 mm); **38-40,** sterna 7 and 8 (ventral and lateral views), genitalic capsule (scale line = 0.50 mm). Figures by R.A. DeNicola.

Prosopis xanthopus Alfken, 1914:107. ♀. ZIMBABWE: Bulawayo, 28 Sept. 1912 (*G. Arnold*) (MNHU) [examined].

DISCUSSION

Bridwell (1919) correctly recognized that Alfken's *P. xanthopus* was a synonym of *P. arnoldi.* His assignment of this bee to *Deranchylaeus* appears to have been based on the descriptions alone. The male terminalia are different from those of *Deranchylaeus;* the lobules of sternum 7 lack teeth, sternum 8 is profoundly bilobed and the gonocoxites are sharply narrowed toward their apices and extend well beyond the level of the apices of the penis valves. The shape of

sternum 8 will immediately separate this species from those assigned here to the new subgenus *Alfkenylaeus*. The female cannot be separated from those of the few species of *Alfkenylaeus*.

SPECIMENS EXAMINED

ZIMBABWE: 1♂, 1♀, Bulawayo, 28 Sept. 1912 (*G. Arnold;* MNHU, types of *P. arnoldi* and *P. xanthopus*, respectively); 4♂♂, same data as *P. arnoldi* type (MNHU, SAM); 1♂, Bulawayo, 21 Sept. 1913 (*G. Arnold;* BMNH); 1♂, Bulawayo, 19 Oct. 1924 (*R.H.R. Stevenson;* AMNH); 1♂, Bulawayo, 5 Oct. 1924 (*no name;* SAM). SOUTH WEST AFRICA: 1♂, Kaoko Otavi, Mar. 1926 (*no name;* SAM); 1♂, Okosongomingo Farm No. 149, 59 km ESE Otjiwarongo, 17 Nov. 1972 (*C.L. Hogue;* LACM); 1♀, Karasburg, 850 m elev., 24 Sept. 1967 (*Ross and Stephen;* CAS).

Subgenus *Metylaeus* Bridwell

Metylaeus Bridwell, 1919:131. Type-species: *Metylaeus cribratus* Bridwell, 1919; original designation.

DIAGNOSIS

Preoccipital carina present; anterior and lateral faces of mesepisternum separated by a carina on lower half; metanotum sharply marginate at sides, usually produced as spiniform process.

DESCRIPTION

(1) Mandible broad, bidentate at apex. (2) Clypeus without preapical depression, with dense to contiguous moderate punctures. (3) Preoccipital carina present. (4) Pronotal collar with anterior carina which extends laterad to posterior lobe. (5) Mesepisternum carinate between anterior and lateral faces in lower half. (6) Lateral, oblique, and transverse propodeal carinae present, strong; basal triangle coarsely areolate. (7) Sulcus of tergum 1 broad, less than half as long as basal face. (8) Tergum 2 with punctiform lateral fovea. (9) Male second and third sterna simple. (10) Male sternum 7 with basal lobule absent or poorly defined, without lateral teeth (Fig. 46). (11) Male gonocoxite broad, blunt, ending slightly beyond level of apex of penis valves, with numerous long, barbed hairs (Fig. 50).

Labral tubercle present in both sexes, not well defined in male; IAD about 1.2 × COD; subantennal sutures about 1.5 × ASD; upper end of female facial fovea ending near inner eye margin; first flagellar segment broader than long, about one-half as long as second segment; scutellar processes present (Figs. 54–55); frontal shield unusually high and short; terminating abruptly a little above level of antennal sockets; dark, slender species with dense to close moderate punctures, usually including first one or two terga.

DISCUSSION

Bridwell (1919) proposed *Metylaeus* as a genus, based in large part on the conspicuous modifications of the scutellum and metanotum. He had available for study both sexes of the type species, but had seen no others. The only other species of which he was aware were two species known from males only: *H. scutispinus* (Alfken) and *H. catalaucoides* (Bridwell) (*H. catalaucoides* was a new name for the improperly associated male of *H. bouyssoui*, a species which Bridwell assumed to belong to his subgenus *Deranchylaeus* of *Hylaeus*); these he knew only from descriptions. Since all of these were known to possess both scutellar and metanotal spines, the presence of such spines was assumed to be characteristic of the new genus. Samples of additional species have negated the significance of these spines as a generic character.

In the females of *H. bouyssoui* and *H. scutispinus* the scutellum is weakly depressed posteromesally, but otherwise is simple. The median area of the metanotum is marked by a sharp oblique carina on each side; the posterior ends of the carinae are joined by a transverse carina, but there are no spines. In females of these species the preoccipital carina is weak, and these are superficially similar to some species of *Deranchylaeus*. The male of *H. scutispinus* has well-developed spines on both scutellum and metanotum and is otherwise similar to *H. cribratus;* the two must be placed in the same group.

Thus, the distinctions between *Metylaeus* and *Deranchylaeus* are less clear-cut than once seemed to be the case. I believe that they are to be treated as related subgenera of *Hylaeus*. Popov (1939) suggested that the Philippine subgenus *Hoploprosopis* ought not be separated from *Metylaeus*. As I have shown elsewhere (Snelling, 1969), the two are readily separable and presumably not at all closely related.

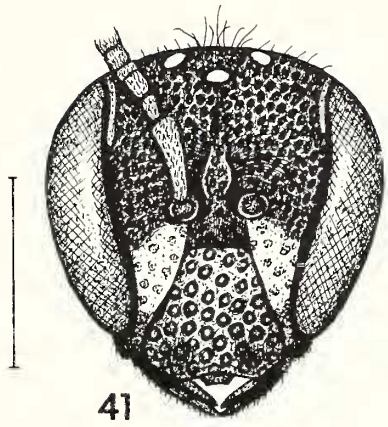
Of the species listed below, *H. spiniger* (Benoist) is known only from Madagascar and is not treated here.

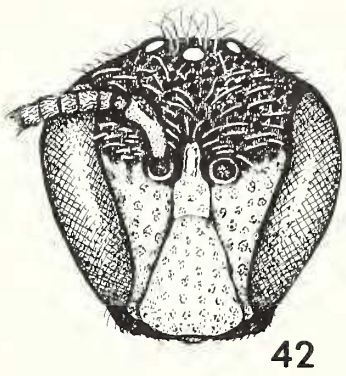
SYNONYMIC LIST OF SPECIES

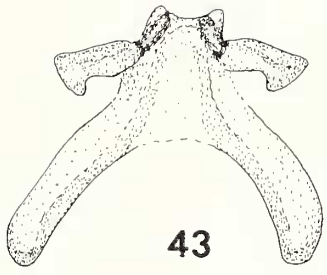
bouyssoui (Vachal)
cribratus (Bridwell)
  =*catalaucoides* Bridwell, NEW SYNONYMY
  =*rugiceps* Friese, NEW SYNONYMY
  =*semlikiensis* Cockerell, NEW SYNONYMY
gaullei (Vachal)
scutispinus (Alfken)
spiniger (Benoist)

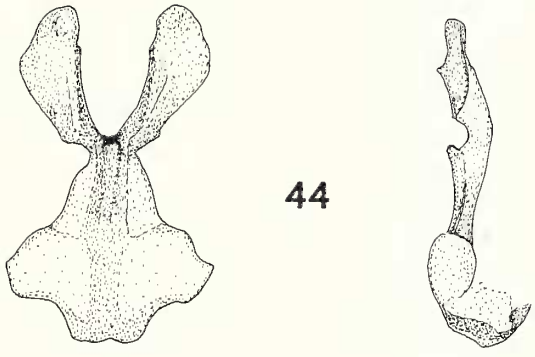
KEY TO SPECIES OF *METYLAEUS*

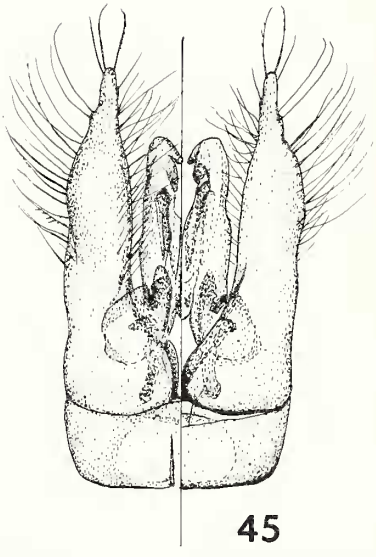
1. Antenna 12-segmented; female 2
– Antenna 13-segmented; male 5
2. Scutellum simple; metanotum with laterally marginate median area, but no spines 3
– Scutellum and metanotum deeply excavated and with posteriorly directed lateral spines .. *cribratus* (Bridwell)
3. Tergum 1 finely and closely punctate, second densely tessellate and impunctate or nearly so; tergum 2 without apical pubescent fascia; clypeus blackish 4
– First and second terga coarsely and subcontiguously to densely punctate; tergum 2 with complete apical pubescent fascia; clypeus partly ferruginous ..... *scutispinus* (Alfken)











Figures 41–45. *H. (Deranchylaeus?) arnoldi:* **41–42,** frontal view of head of female and male (scale line = 1.00 mm); **43–45,** male sterna 7 and 8 (ventral and lateral views), genitalic capsule (scale line = 0.50 mm). Figures by R.A. DeNicola.

4. Interspaces of tergum 1 slightly shiny, obviously sculptured; second tergum virtually impunctate; first two terga without subdecumbent to suberect hairs .... *bouyssoui* (Vachal)
– Interspaces of tergum 1 smooth, subpolished; second tergum with sparse to scattered minute punctures; first two terga with scattered subdecumbent to suberect hairs, especially laterad ..... *gaullei* (Vachal)
5. Scape, flagellum and metabasitarsus black; punctures of tergum 2 much finer than those of first (rarely, punctures

may be very obscure), apical margin not, or weakly, depressed ..... *cribratus* (Bridwell)

– Scape and flagellum reddish, metabasitarsus reddish to yellow; tergum 2 nearly as coarsely and closely punctate as first, apical margin sharply depressed .... *scutispinus* (Alfken)

Hylaeus (*Metylaeus*) *bouyssoui* (Vachal)

Figure 53

Prosopis Bouyssoui Vachal, 1899:535. ♀ only. GABON: N'Doro, 15 Sept. and 12 Nov. 1898 (*J. Bouyssou*) (MNHN) [examined].

DIAGNOSIS

Female only: Scutellum and metanotum without sublateral spiniform processes; tergum 1 tessellate and moderately shiny between fine, close punctures, middle impunctate or nearly so. Male unknown.

DESCRIPTION

FEMALE. Measurements. HL 1.56; HW 1.63; TL 5.6, WL 4.3.

Head. Slightly wider than long; HW 1.04 × HL; scape short, SL 0.32 × HL, SL 2.80 × SW. Eyes moderately convergent below, UFW 1.48 × LFW. Clypeus broad, CW 1.05 × CL; BCW 0.55 × CW, 2.20 × ASD, 1.57 × IAD, 1.37 × COD. Clypeal punctures shiny within, moderate, contiguous to subcontiguous, round, shallow, interspaces slightly shiny; supraclypeal area with contiguous, slightly coarser punctures; paraocular areas similar to clypeus; sides of supraclypeal shield moderately flared, margins effaced, disc rugulose, apical width about 0.25 × ASD; punctures of vertex and occiput a little coarser, more regular in shape, shiny within; gena slightly shiny, with moderate to coarse contiguous punctures, shiny within. Fovea ending slightly nearer eye than ocellus.

Thorax. Carina of pronotal collar sharp, disc with dull interspaces between moderate, subcontiguous punctures. Mesoscutum about 1.15× wider than long. Scutellum flat, about 0.34 × length of mesoscutum. Metanotum with median, laterally and posteriorly carinate trapezoidal area, interior of which is irregularly, finely rugulose; lateral areas dull and tessellate near trapezoid, finely and contiguously punctate at extreme side. Mesoscutum dull between moderate, contiguous to subcontiguous punctures; scutellum weakly depressed in middle, more strongly so posteriorly, depressed area with fine to moderate, subcontiguous punctures which become fine and contiguous posteriorly, lateral areas with irregularly spaced, mostly moderate punctures; mesopleuron dull between coarse, contiguous to subeontiguous shallow punctures which are shiny within; metapleuron dull, moderately, contiguously punctate. Side of propodeum slightly shiny, finely, closely and irregularly rugulose; stigmatal and discal areas coarsely rugulose; basal triangle coarsely, quadrately areolate.

Abdomen. Tergum 1 about 1.5× wider than long, disc moderately shiny between fine, subcontiguous to dense punctures, impunctate along midline; pregradulus of tergum 2 moderately shiny between scattered minute punctures, gradulus weakly impressed, disc moderately shiny between very obscure, sparse, minute punctures, margin not depressed in middle.

Pilosity. Propodeum pollinose; first and second terga without apicolateral pubescent fasciae.

Color. Black. A pair of submedian spots on pronotal collar, part of posterior pronotal lobe and basal spot on protibia, yellowish. Antenna and legs brownish, flagellum paler beneath. Wings slightly brownish, veins and stigma dark brown.

TYPE MATERIAL

Described from two females (15 Sept. and 12 Nov. 1898) from N'Doro, GABON, collected by J. Bouyssou. The male described by Vachal is not conspecific. Of the original two females of *P. bouyssoui,* one is in the Paris Museum and bears a red TYPE label and another label, in Vachal's hand: "Bouyssoui/Vach." This specimen is here seleeted as the lectotype.

DISCUSSION

Because the female does not possess scutellar and metanotal spines, Bridwell (1919) placed *P. bouyssoui* in his subgenus *Deranchylaeus* of *Hylaeus;* the male was recognized to belong to *Metylaeus.* In the original description of the male, Vachal stated that the metanotal spines were triangular. With this distinction between Vachal's male specimen and those which he had described as *M. cribratus,* Bridwell renamed the Vachal male as *M. catalaucoides.*

The female of *H. bouyssoui* is very similar to that of *H. gaullei* but is smaller, the mesoscutum is dull between contiguous to subcontiguous punctures and the first tergum is moderately shiny and distinctly tessellate between fine, close punctures, except along the essentially impunctate midline.

MATERIAL EXAMINED

Only the lectotype has been seen.

Hylaeus (*Metylaeus*) *cribratus* (Bridwell)

Figures 46–47, 51–52

Metylaeus cribratus Bridwell, 1919:131–133. ♂♀. NIGERIA: Ibadan, Aug.–Sept. 1914 (*J.C. Bridwell*) (USNM) [examined].

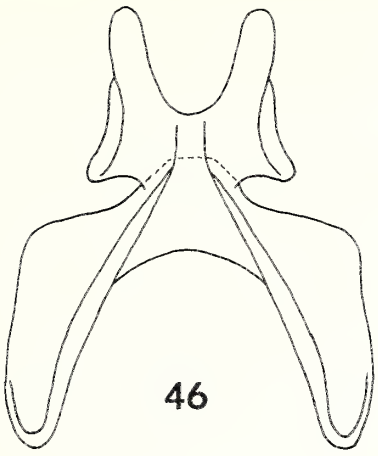
Metylaeus catalaucoides Bridwell, 1919:133. ♂. GABON: N'Doro, 30 Sept. 1898 (*J. Bouyssou*) (MNHN) [examined]. New name for *Prosopis Bouyssoui* Vachal, ♂, not ♀. NEW SYNONYMY.

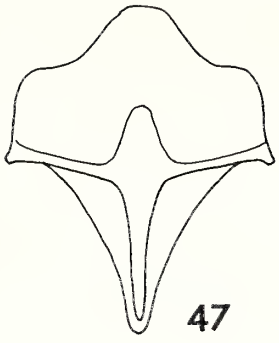
Prosopis rugiceps Friese, 1921:1105–1106. ♀. ZAIRE: Duma, Ubangi District, 20 Oct. 1910 (*Schubotz*) (type depository unknown). NEW SYNONYMY.

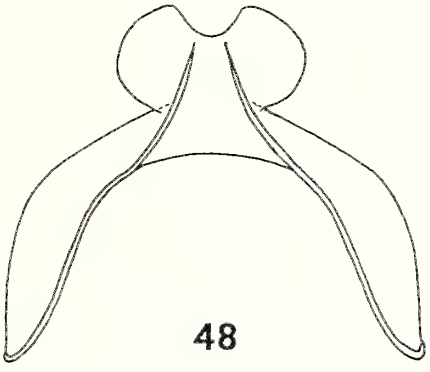
Metylaeus semlikiensis Cockerell, 1936:11. ♀. ZAIRE: Semliki Valley, 16 Aug. 1914 (*J. Bequaert*) (AMNH) [examined]. NEW SYNONYMY.

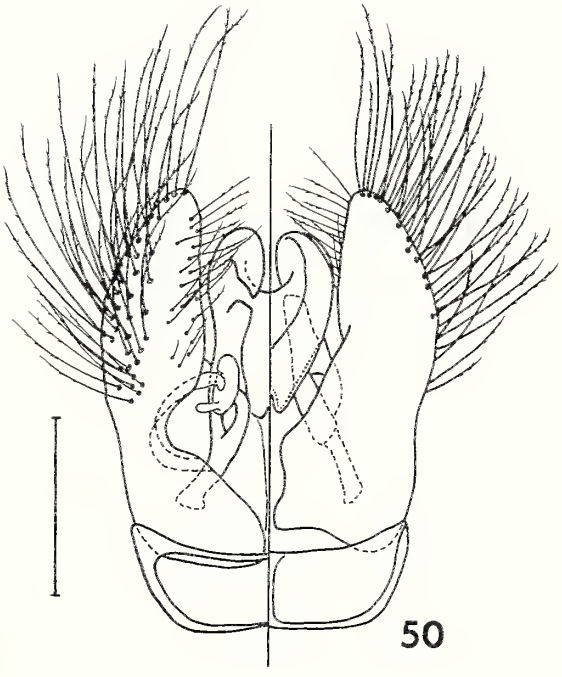
DISCUSSION

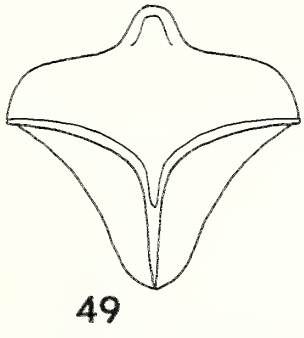
The male which Vachal (1899) described as that of *Prosopis bouyssoui* was correctly recognized by Bridwell (1919) as not











Figures 46–50. Males, *H.* (*Metylaeus*) spp.: **46–47,** sterna 7 and 8, *H. cribratus;* **48–50,** sterna 7 and 8, genitalic capsule *H. scutispinus* (scale line = 0.25 mm).

being conspecific with the female. Accordingly, he renamed the male as *Metylaeus catalaucoides.* The name is based on that of the ant genus *Cataulacus* and is, therefore, misspelled. The erroneous spelling evidently did not originate with Bridwell, for Vachal wrote "fere sicut in Catalauco reticulata Sm. . . . ." The point is moot, however, since this name is a junior synonym of *H. cribratus.*

Vachal's male is from N'Doro and is in the Paris Museum.

It bears a label in Vachal's hand: "Bouyssoui/Vach." Inasmuch as this is the type of *M. catalaucoides,* I have attached to it a red label: "TYPE/*Metylaeus/catalaucoides*/BRIDWELL 1919."

Although no type material of *P. rugiceps* has been examined, nothing in the description would indicate this to be anything other than *H. cribratus;* Friese may not have been aware of Bridwell's species when he described *P. rugiceps.* The specimens from Cameroon and Uganda were identified as *P. rugiceps* by Alfken, who may have seen type material of this name. Cockerell's *M. semlikiensis* is identical to other females from Zaire which form part of a continuous series of variants to typical *H. cribratus.* Cockerell stated otherwise, but there are remnants of a hair band along the margin of the first tergum of the type of *M. semlikiensis.*

MATERIAL EXAMINED

NIGERIA: 9♂♂, 15♀♀, Oloke Meji, Ibadan, Aug.–Sept. 1914 (*J.C. Bridwell;* USNM) (type series of *M. cribratus*); 1♂, 1♀, Lagos, 18 Aug. 1966 (*C.D. Michener;* UKAN). CAMEROON: 1♀, Akoafim, no date (*S.G. Tessmann,* No. 15-31; SAM). GABON: 1♂, N'Doro, 30 Sept. 1898 (*J. Bouyssou;* MNHN) (type of *M. catalaucoides*). ZAIRE: 1♀, Semliki Valley, 16 Aug. 1914 (*J. Bequaert;* AMNH) (type of *M. semlikiensis*); 1♂, 61 mi. E Kenge, 5 Aug. 1957; 1♂, 4♀♀, 18 mi. W Luanza, 1300 m elev., 16 Jan. 1958; 1♂, 39 mi. NE Lusambo, 12 Aug. 1957; 1♂, 2♀♀, Irangi, 900 m elev., Luhoho R., 10 Sept. 1957; 1♀, 39 km S Walikale, 700 m elev., 25 Dec. 1957; 1♀, 33 mi. SW Kamituga, 675 m elev., 17 Aug. 1957 (all *E.S. Ross & R.E. Leech;* CAS). UGANDA: 4♀♀, no further data (MNHU). ANGOLA: 1♂, near Kasai R., July 1931 (*T.D.A. Cockerell;* BMNH).

Hylaeus (*Metylaeus*) *gaullei* (Vachal)

Prosopis Gaullei Vachal, 1899:536. ♀. GABON: Mouny, no further data (MNHN) [examined].

DIAGNOSIS

Female. Scutellum and metanotum without sublateral spines; tergum 1 subpolished, with moderate, irregularly spaced punctures. Male. Unknown.

DESCRIPTION

FEMALE. Measurements. HL 1.80; HW 1.87; WL 5.3; TL 6.6 mm.

Head. Broad, HW 1.03 × HL; scape short, SL 0.26 × HL; SL 2.54 × SW. Eyes moderately convergent below, UFS 1.34 × LFW. Clypeus as broad as long; BCW 0.63 × CW, 2.50 × ASD, 1.36 × IAD, 1.67 × COD. Clypeus weakly depressed on each side of middle, dull between shallow, moderate, subcontiguous to dense punctures which are shinier than interspaces; supraclypeal area with coarse, contiguous punctures; paraocular area similar to clypeus, but punctures mostly subcontiguous and interspaces slightly shiny; supraclypeal shield depressed in middle, with a few obscure moderate to coarse punctures; frons slightly shiny between moderate to coarse, contiguous to subcontiguous deep punctures; vertex and occiput coarsely rugosopunctate, moderately shiny; gena moderately shiny and finely lineolate between moderate to coarse, contiguous to subcontiguous punctures which are shiny within. Fovea ending a little less than halfway between eye and ocellus.

Thorax. Carina of pronotal collar weak at side, slightly depressed in middle, disc moderately shiny between fine to moderate, irregularly spaced punctures. Mesoscutum about 1.3× wider than long. Scutellum flat, about 0.38 × length of mesoscutum. Metanotum weakly convex, about half as long as scutellum. Mesoscutum slightly to moderately shiny between moderate, mostly dense punctures; scutellum moderately shiny, with very irregularly spaced, fine to coarse punctures; metanotum in middle with large, laterally and posteriorly carinate, trapezoidal shiny and irregularly roughened area, lateral areas dull, moderately and contiguously punctate; mesopleuron slightly shiny between shallow, flat-bottomed, moderate to coarse, subcontiguous to dense punctures which are moderately shiny within; metapleuron moderately shiny, coarsely rugosopunctate. Side of propodeum appearing dull because of dense, hoary pubescence, finely rugosopunctate; stigmatal area and disc moderately rugosopunctate.

Metasoma. Tergum 1 about 2.1× wider than long, disc subpolished, nearly impunctate along middle, otherwise with close to sparse, fine punctures; tergum 2 moderately shiny between minute sparse to fine punctures; remaining terga duller, with scattered, obscure, ultraminute punctures.

Pilosity. Pronotal collar with conspicuous, though narrow, transverse fascia; terga 1 and 2 without apicolateral fascia.

Color. Black. Legs, underside of flagellum and tegula brown. Pronotal lobe with posterior yellowish blotch. Wings slightly brownish, veins and stigma medium brown.

TYPE MATERIAL

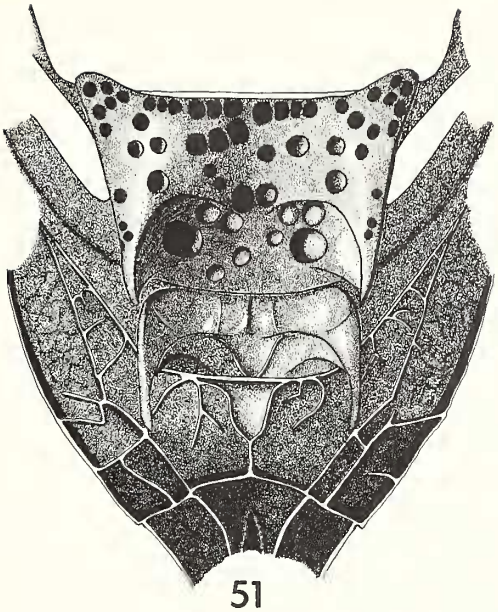
Described from a single female. The type is in the Paris Museum; there is no type label, but the data are correct, the specimen matches the description and bears a label in Vachal's hand identifying it as *P. Gaullei.* I have no doubt this is the type and have affixed to it a red label: "TYPE? Prosopis/Gaullei/VACHAL 1899." The type is the only specimen examined of this species.

DISCUSSION

The original description is inadequate and Bridwell (1919) assumed *H. gaullei* to be a species of *Deranchylaeus* close to

→

Figures 51–55. *H.* (*Metylaeus*) spp., dorsal view of scutellum, metanotum, and propodeal base: **51–52,** female and male, *H. cribratus;* **53,** female, *H. bouyssoui;* **54–55,** female and male, *H. scutispinus* (scale line = 0.50 mm, 51–52, 54–55 to same scale).



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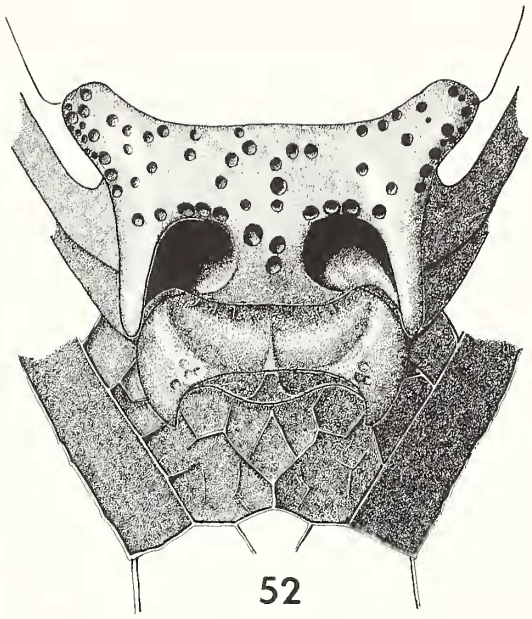

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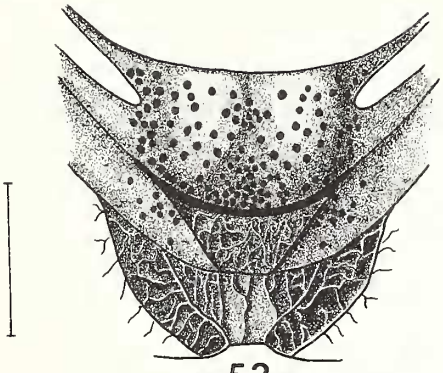

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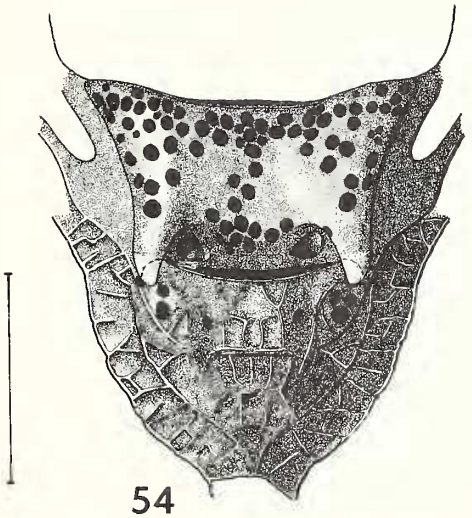

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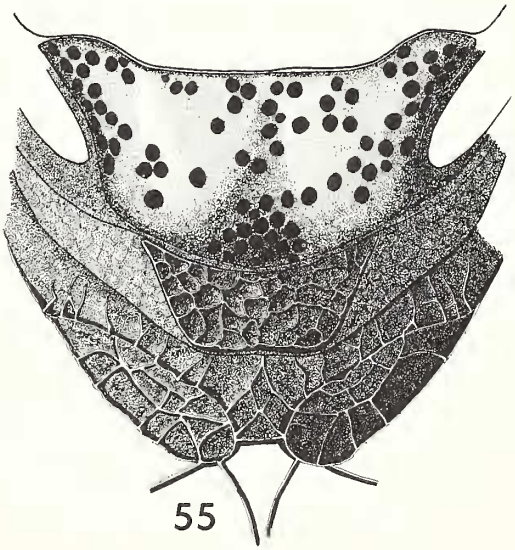

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H. dregei. It is, however, a *Metylaeus* close to *H. bouyssoui.* The larger size, more sparsely punctate mesoscutum and shiny, sparsely punctate first tergum will readily separate *H. gaullei* from *H. bouyssoui.* The lack of scutellar and metanotal spines will differentiate *H. gaullei* from *H. cribratus.*

Hylaeus (*Metylaeus*) *scutispinus* (Alfken)

Figures 48–50, 54–55

Prosopis scutispina Alfken, 1914:195. ♂. ZIMBABWE: Bulawayo, 28 Sept. 1912 (*G. Arnold*) (MNHU) [examined].

DISCUSSION

The female of *H. scutispinus* lacks spines on the scutellum and metanotum, although they are present in the male. Additional features of the female are the ferruginous mandible, labrum, and portions of the clypeus, the sharply and subcontiguously to densely punctate second tergum and the presence of a complete apical pubescent fascia on the second tergum. The male is distinguished by the reddish antenna and by the coarsely and closely punctate second tergum, the apical margin of which is sharply depressed.

MATERIAL EXAMINED

UPPER VOLTA: 13♀♀, 7♂♂, Bobo-Dioulasso, 20 Feb. 1980 (*A. Pauly;* GEMB), on *Guiera senegalensis;* 1♀, Mare-aux-Hippopotames, 3 Oct. 1979 (*A. Pauly;* GEMB); 1♂, Dingasso (near Bobo), 28 Sept. 1979 (*A. Pauly;* GEMB), on *Ziziphus mauritiana;* 1♂, Kougny, 12 Feb. 1980 (*A. Pauly;* GEMB). KENYA: 1♀, Diani Beach, Aug. 1951 (*N.L.H. Krauss;* BMNH); 1♀, Guengere, Pungoue Valley, Mozambique, no date (*no name;* MNHN). BOTSWANA: 1♀, Maun, 930 m elev., 6 Nov. 1976 (*Ross and Stephen;* CAS). SOUTH WEST AFRICA: 1♂, 2♀♀, Kaoko Otavi, Mar. 1926 (*no name;* SAM). ZIMBABWE: 1♂, Bulawayo, 28 Sept. 1912 (*G. Arnold;* MNHU; type of *P. scutispina*); 1♂, Bulawayo, 16 Feb. 1913 (*R.H.R. Stevenson;* SAM).

Nothylaeus Bridwell

Nothylaeus Bridwell, 1919:125–126. Type-species: *Prosopis heraldica* F. Smith, 1853; original designation.

Nothylaeus, sub. *Anylaeus* Bridwell, 1919:129–130. Type-species: *Nothylaeus* (*Anylaeus*) *aberrans* Bridwell, 1919; original designation. NEW SYNONYMY.

DIAGNOSIS

Separable from all known hylaeine genera by the elongate, slender mandible, with acuminate apex and without preapical tooth or with greatly reduced tooth.

DESCRIPTION

(1) Mandible elongate, apex acuminate, preapical tooth absent or greatly reduced. (2) Labral tubercle very broad, covering most of labrum, without median depression. (3) Tentorial pit at or (usually) below midpoint of clypeal length. (4) First flagellar segment of male shorter than, or no longer than, second. (5) Frontal shield present. (6) Lateral and oblique propodeal carinae present, usually entire; propodeal groove broad, shallow. (7) Sulcus of tergum 1 broad, less than one-half as long as basal face. (8) Gradulus of tergum 2 gently arched, slightly defleeted laterad; lateral fovea broadly oval. (9) Tergum 3 of male without sublateral pubescent fovea. (10) Male sternum 7 bilobate, each lobe with proximal and distal sublobes, lateral margin serrate or ciliate. (11) Male sternum 8 with apical process short, broad, preapically expanded; dorsal tubercle subapical or apical. (12) Male gonocoxite narrow and elongate, extending much beyond apex of aedeagus.

DISCUSSION

The precise status of *Nothylaeus* is somewhat dubious. Bridwell (1919) proposed *Nothylaeus* as a genus and it has been generally recognized as such, although Cockerell (1936, 1942) seemed to be ambivalent. In originally characterizing *Nothylaeus,* Bridwell stressed the elongate, sharply pointed mandibles of both sexes and the greatly elongated gonocoxal apex of the male.

The elongate gonocoxal apex is not unique to species of *Nothylaeus.* This is a feature that occurs sporadically in some species of African *Hylaeus* and in *Hylaeus* from other parts of the world, as well. These are clear cases of morphological character convergence.

The mandibular structure of both sexes is unique among hylaeine bees. In very nearly all hylaeines, the mandibles of both sexes are short and broad, the outer surface is marked by distinct longitudinal ridges and grooves and the apical margin is truncate to oblique, with one or more preapical teeth. The mandible in *Nothylaeus* is remarkably elongate, at least three times longer than broad at its midlength, there are no distal and dorsal faces, as such, the preapical tooth is absent or greatly reduced and the outer face of the mandible lacks obvious grooves and ridges.

Nothylaeus, as a genus apart from *Hylaeus,* would be more secure if additional supportive features could be found. The robust habitus of *Nothylaeus* species is characteristic, but too elusive to describe adequately. The head is relatively short and broad and many parts of the body are extensively ferruginous, but these features occur widely in *Hylaeus.* However, I am compelled to consider *Nothylaeus* separate from *Hylaeus,* since the mandibular form is so consistent and unique.

No such uncertainty prevails in the case of *Anylaeus,* proposed as a subgenus of *Nothylaeus* by Bridwell (1919). Species assigned to *Anylaeus* differed from those of *Nothylaeus* (s.s.) in having the scutellum and metanotum modified in a manner similar to those of the subgenus *Metylaeus* of *Hylaeus.* This was true for both sexes of the species known to Bridwell at that time. Now, species are known in which the modified thoracic segments occur in the male but not the female. I have here treated *Anylaeus* as a synonym of *Nothylaeus.* The species of *Nothylaeus* will be revised in the second part of this study.

LIST OF INCLUDED SPECIES NAMES

aberrans Bridwell, 1919
abyssinica (Alfken, 1905)
ameliae (Cockerell, 1942)
bevisi (Cockerell, 1917)
binotata (Alfken, 1914)
braunsi (Alfken, 1905)
dentiferella (Strand, 1912)
fortis Cockerell, 1936a
fumata (Strand, 1912)
gigas (Friese, 1911)
haemorrhoa Benoist, 1946*
heraldica (F. Smith, 1853)
isochromus (Cockerell, 1936a)
junodi (Friese, 1911)
libericus Cockerell, 1936a
maculipes Cockerell, 1936a
magretti (Vachal, 1892)
montacuti Cockerell, 1942
neavei (Cockerell, 1942)
nigricans (Friese, 1913)
nyassana (Strand, 1912)
peringueyi Bridwell, 1919
rhodesicus Cockerell, 1942
rubrifacialis (Strand, 1912)
rubriplagiata (Cameron, 1905)
rufipedoides (Strand, 1911)
rufipicta (Strand, 1912)
sansibaribia (Strand, 1912)
simpsoni (Cockerell, 1942)
subfortis Cockerell, 1942
uelleburgensis (Strand, 1912)
ugandicus Cockerell, 1939
umtalicus Cockerell, 1936a
yoruba Bridwell, 1919

Calloprosopis, new genus

Type-species: *Hylaeus magnificus* Cockerell, 1942.

DIAGNOSIS

Body metallic blue in both sexes, female immaculate, male with maculate clypeus; sulcus of first tergum narrow, extending nearly full length of basal face; female with elongate, raised glabrous area at base of metatibia; male with gonobase reduced, not forming cup at base of genital capsule.

DESCRIPTION

(1) Mandible stout, bidentate, apical margin oblique in female, transverse in male. (2) Labral tubercle prominent in both sexes. (3) Tentorial pit at about midlength of clypeus. (4) Pedicel, first and second flagellar segments about equal in length, longer than broad. (5) Frontal shield present. (6) Oblique propodeal carina absent, lateral carina very weak, obvious only near its terminus; basal triangle almost entirely on dorsal face; posterior groove deep and narrow. (7) Sulcus of tergum 1 narrow, deep, extending almost entire length of basal face. (8) Gradulus of tergum 2 broadly convex, pregradulus much longer in middle than at sides; lateral fovea absent, but spiracle in shallow depression. (9) Sternum 3 of male with median, transverse, low swelling. (10) Male sternum 7 transverse, lobes reduced (Fig. 58). (11) Male sternum 8 with elongate distal process, apex transverse, dorsal tubercle absent (Fig. 59). (12) Male genitalia massive, gonocoxite robust, ending at about level of apex of penis valve (Fig. 61).

Integument metallic blue, female without pale marks, male with pale clypeal mark only; scape slender; female metatibia with elongate, glabrous, basal ridge on outer side; male gonobase forming a ring-like flange at base of genital capsule; male volsella elongate, with prominent lateral tubercles.

ETYMOLOGY

The Greek *kallos* (beauty) plus *Prosopis,* an old generic name for *Hylaeus.*

DISCUSSION

This genus closely resembles *Hylaeus,* but differs immediately from all known species of the Ethiopian and South African regions by the metallic blue color. This character, however, does appear in some *Hylaeus* groups in Australia and the Philippine Islands. The presence of what appears to be the basitibial plate in the female and the modifications of the male terminalia are sufficient in my opinion to justify recognition of *Calloprosopis* at generic level. The modifications of the male genital capsule, in particular, are unique among the Hylaeinae. Among all Hylaeinae which I have studied directly, and among those described and illustrated by other workers, the gonobase is large and forms a cup-like base to the genital capsule. In *Calloprosopis* the gonobase, dorsally, projects into an emargination between the gonocoxites; from this area it extends ventrad to form a heavily sclerotized ring. The gonocoxites are heavily sclerotized and are dorsoventrally broadened; they do not extend beyond the apices of the penis valves. The volsellae are heavily sclerotized and the median lobes are elongate, with scattered small tubercles on the outer faces. There is a deep longitudinal groove along the entire length of the penis valves, the apices of which are rather blunt and not as strongly deflected downward as in *Hylaeus.* Sternum 8 of the male is typically hylaeine in appearance but lacks the notch at the base of the apical process which is usually present in *Hylaeus.* Sternum 7, too, is typically hylaeine, but it is much broader than long; the apodemes form a regular arc and the apical process is quite short, with small lobes.

Most of the genitalic features are nothing more than extreme modifications of conditions already present in other

* Known only from Madagascar.

hylaeines. The structure and orientation of the gonobase are unique, however, and it is largely on this basis that *Calloprosopis* is given generic rank here. A cursory study of various colletid genera in other subfamilies suggests that this peculiarity may be unique within the family.

Calloprosopis magnifica (Cockerell), new combination

Figures 56–61

Hylaeus magnificus Cockerell, 1942:9–10. ♂. KENYA: east foot and slopes, Aberdare Mts., 7000–8500 ft. elev., 24–27 Feb. 1911 (*S.A. Neave*) (BMNH) [examined].

Both sexes are immediately separable from all other known hylaeines in the Ethiopian Region by their metallic color. This species appears to be restricted to high elevations in Kenya.

MATERIAL EXAMINED

KENYA. 1♂, east foot and slopes, Aberdare Mts., 7000–8500 ft. elev., 24–27 Feb. 1911 (*S.A. Neave;* BMNH, cotype); 1♂, 1♀, Mt. Kinganop, 9000 ft. elev., Aberdare Range, cedar forest, 27 Oct. 1934 (*F.W. Edwards;* BMNH); 1♂, Kerita, 2640 m elev., 38 mi. NW Nairobi, 16 Oct. 1957 (*E.S. Ross & R.E. Leech;* CAS).

Psilylaeus, new genus

Type-species: *Psilylaeus sagiops,* new species.

DIAGNOSIS

Frontal shield absent; integument uniformly tessellate, without obvious punctures; propodeum without defined basal triangle; lateral fovea of second tergum broadly oval.

DESCRIPTION

(1) Mandible short, sharply bidentate in male, weakly so in female. (2) Labrum short and broad, male without tubercle, female with elevated median tubercle which is weakly divided in middle. (3) Tentorial pit slightly below midlength of clypeus. (4) Male first flagellar segment transverse, shorter than pedicel, as long as second, each shorter than third. (5) Frontal shield absent. (6) Lateral and oblique propodeal carinae absent. (7) Sulcus of tergum 1 about one-half as long as basal face. (8) Gradulus of tergum 2 weakly bowed, concealed. (9) Tergum 3 with round sublateral pubescent fovea, usually hidden under margin of second segment. (10) Male sternum 7 bilobate, basal lobule setose, distal lobule with apically hooked hairs (Fig. 64). (11) Male sternum 8 with apical process broad, setose at margin; dorsal tubercle slightly beyond midlength of apical process (Fig. 65). (12) Male gonocoxite stout, blunt, not reaching level of apex of aedeagus (Fig. 66).

Integument densely tessellate and dull, with sparse to scattered, inconspicuous punctures on thoracic dorsum; front of head dull between fine, contiguous punctures; eyes broadest below midlength; IAD less than COD; frontal shield absent; clypeal margins abruptly divergent in lower one-third; posterior margin of pronotum much below dorsum of mesoscutum, collar virtually absent except at sides; propodeum with long, subhorizontal basal face.

ETYMOLOGY

The generic name combines the Greek *psilos* (bare or smooth) with *Hylaeus* and refers to the virtually impunctate thoracic dorsum, and especially to the smooth propodeum.

DISCUSSION

This genus is known to include only the type species, and is known only from coastal South Africa in the vicinity of Cape Town. The peculiarly smooth integument and unusual propodeal structure are especially characteristic of this small bee. In particular, the sutures which normally demark the propodeal triangle are very weak and largely effaced.

Psilylaeus has been compared with various groups in hylaeines from Australia. In the key by Michener (1965), *Psilylaeus* fails at the last couplet, since it does not agree with either alternative (*Hylaeorhiza* and *Hylaeus*). From *Hylaeorhiza, Psilylaeus* differs in the bilobed, rather than acute, glossa of the male and the outer apical angle of the hind tibia is not obtuse. From *Hylaeus, Psilylaeus* differs (in the key) in the structure of the propodeum. In the more recent key to Australian genera by Houston (1975), *Psilylaeus* will run to *Hylaeus.*

The depressed pronotum, without a well-defined collar, occurs in two Australian subgenera of *Hylaeus: Macrohylaeus* and *Hylaeteron.* The former includes large, metallic species with a long second submarginal cell in the forewing. The known species of *Hylaeteron* are small, robust bees with tridentate female mandibles, sharply reticulate propodeum and exceptionally short subantennal sutures. Both of these subgenera are known only from the Australian area.

Psilylaeus sagiops, new species

Figures 62–66

DIAGNOSIS

Same as generic diagnosis.

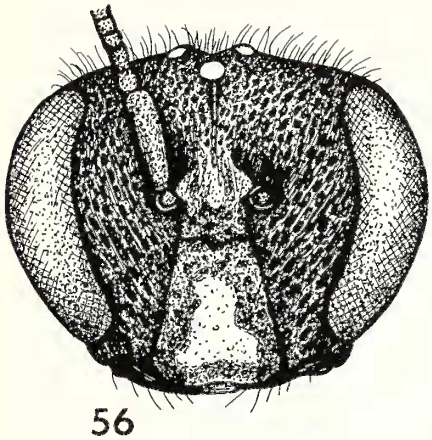
DESCRIPTION

MALE (HOLOTYPE). Measurements. HL 1.12; HW 1.29; SL 0.30; WL 3.50; TL 4.97 mm.

Head. Broad, HW 1.1 × HL; scape short, twice longer than

→

Figures 56-61. *Calloprosopis magnifica:* **56-57,** frontal view of head, female and male (scale line = 1.00 mm); **58-61,** male sterna 7 and 8, genital capsule (lateral), genitalic capsule (dorsal and ventral) (scale line = 0.50 mm). Figures 61, 62 by R.A. DeNicola.



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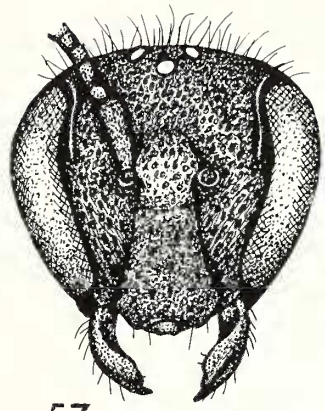

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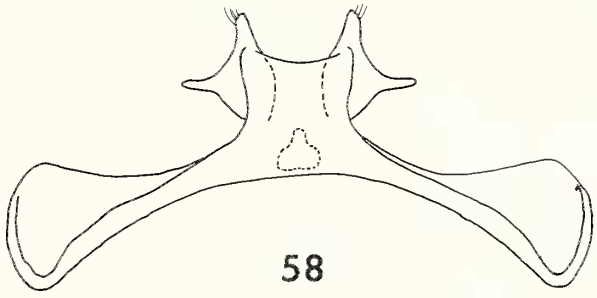

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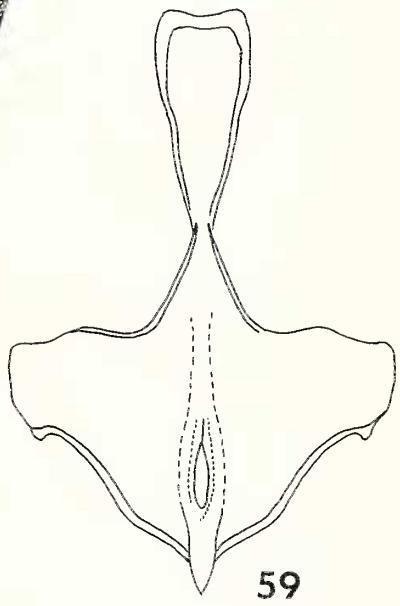

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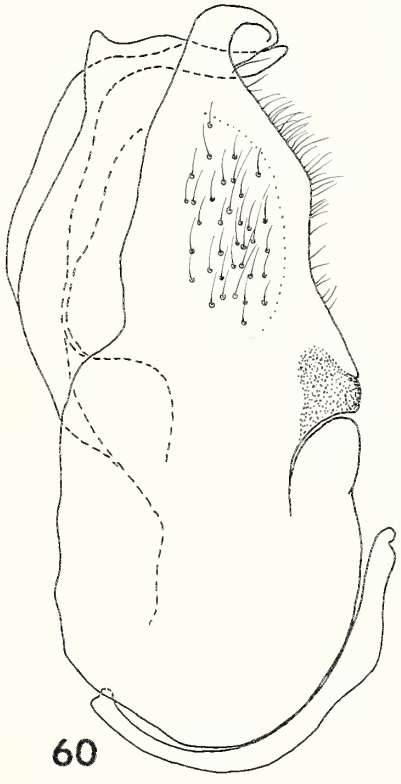

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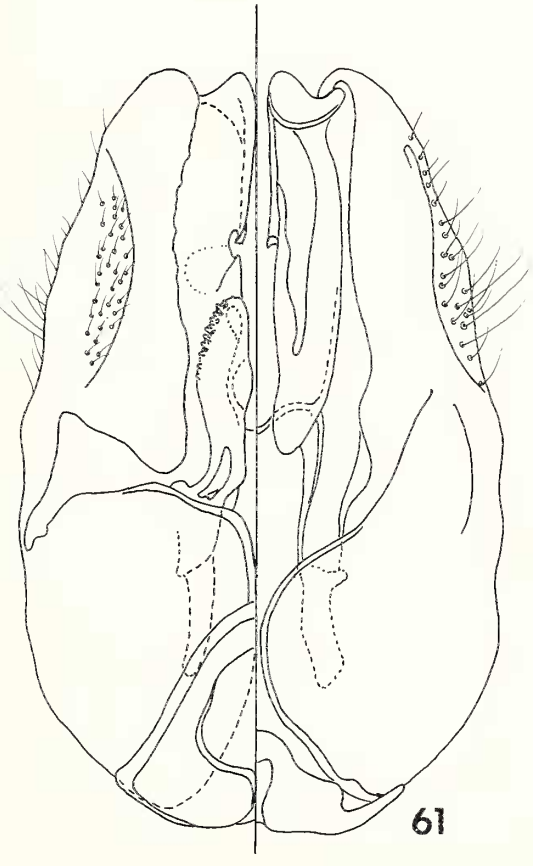


61

wide, SL 0.27 × HL. Eyes strongly convergent below, UFW 1.55 × LFW, conspicuously broader below than above in frontal view; in profile, broadest below midpoint, maximum width 0.45 × EL. Clypeus slightly wider at apex than long, epistomal sutures abruptly divergent in lower third; BCW 0.41 × CW × 1. Clypeus and lower half of face slightly shiny, densely tessellate, with scattered obscure shallow punctures; immaculate areas of head duller, densely and finely punctate and tessellate; gena slightly shiny, finely lineolate, with sparse, shallow, fine punctures.

Thorax. Moderately robust, about 1.4× longer than wide. Mesoscutum a little wider than long; in profile, anterior portion convex, rising well above pronotum. Scutellum flat, on same plane as posterior portion of scutum; median length about 0.4 × that of scutum. Postscutellum flattened in profile, sloping away from scutellum, median length less than half that of scutellum. From above, sides of propodeum strongly convergent distad, basal width almost twice apical; in profile, basal face continuous with slope of postscutellum, broadly rounded into, and longer than, posterior face; without carinae or ridges. Slightly shiny, densely tessellate and impunctate; mesopleuron and basal face of propodeum obscurely lineolate; mesopleuron with sparse, fine punctures.

Abdomen. Widest beyond middle; apical width of tergum 1 greater than median length; sternum 3 with a pair of low, shining prominences obliquely directed distad, on either side of midline, highest at about middle; sternum 4 with a pair of broad flattened, shiny eallosities; sternum 5 with a similar, but much smaller, pair; apex of sternum 6 broadly rounded. Moderately shiny, finely transversely lineolate; all terga with apical, nonsculptured band; tergum 1 with very fine scattered punctures; tergum 2 more closely punctate, punctures larger; tergum 3 similar to 2.

Terminalia. As described for the genus.

Pilosity. Very sparse; lower half of face with hairs short, stiff; upper half with hairs much longer; scape with a few moderately long hairs; underside of head with scattered long hairs, espeeially in hypostomal area. Mesoscutum with very short hairs only; scutellum and postseutellum with a few very long hairs at sides; pleura and sides of propodeum with scattered long hairs; propodeum otherwise with sparse, short subappressed hairs. Terga with sparse, short hairs, appressed on discs, longer and partially to fully erect laterad; progressively longer on succeeding segments. Sterna with sparse erect hairs, longest laterad.

Color. Blaekish. Mandibles, except ferruginous apices; labrum; clypeus; transverse supraclypeal mark; face between clypeus and eye, extending about halfway upward along inner orbit; narrow line on underside of scape; narrow stripe on sides of pronotal collar; pronotal lobe; apical spot on pro- and mesofemora; basal mark on meso- and metatibia; all light yellowish. Protibia and tarsi, mesotarsi, light ferruginous, apical tarsal segments brownish. Metabasitarsus whitish on basal third, metatarsus otherwise brownish. Tibial spurs whitish. Tegulae brownish. Wings uniformly light brownish, veins and stigma darker.

FEMALE (ALLOTYPE). Measurements. HL 1.05; HW 1.11; SL 0.25; WL 3.30; TL 4.35 mm.

Head. Broad, HW 1.05 × HL. Eyes strongly convergent below, UFW 1.52 × LFW, conspicuously broader below than above; in side view, broadest part below midpoint, and 0.52 × EL. Mandibular apex braod, truncate, obscurely bidentate. Clypeal shape as in male; BCW 0.46 × CW; BCW: COD:CAD:ASD:IAD = 13:10:9:8:10. Scape and flagellum as in male. Frontal line deep, terminating broadly at level of lower margin of antennal sockets. Facial fovea terminating at top of eyes, adjacent to eye margin. Surface sculpture as in male.

Thorax. As in male.

Abdomen. As in male but lacking ventral modifications; apical bands of terga broader.

Pilosity. As described for male but conspicuously shorter.

Color. Blackish. Minute basal spot on mandible; broad longitudinal median stripe on clypeus; narrow stripe along inner orbit, from lower end of eye to lower end of fovea; narrow stripe on pronotal collar on each side, broadly interrupted in middle; pronotal lobe; outer stripe on protibia; basal spot on meso- and metatibia, all pale yellowish. Metatibial spur, tegula, and wings as in male.

TYPE MATERIAL

All from Cape Province, SOUTH AFRICA: Holotype male, Mossel Bay, 11 Oct. 1938 (*R.E. Turner*). Allotype, same locality, 12 Oct. 1938 (*R.E. Turner*). Holotype and allotype in BMNH. Paratypes: 4♂♂, same data as holotype; 2♂♂, 2♀♀, same data as allotype; 1♂, same locality, 1 Oct. 1938 (*R.E. Turner*); 1♀, same locality, Apr. 1933 (*R.E. Turner*); 7♂♂, same locality, Mar.–Apr. 1930 (*R.E. Turner*); 1♂, same locality, 7 Oct. 1941 (*R.E. Turner*); 1♀, same locality, 5 Dec. 1941 (*R.E. Turner*); 6♂♂, same locality, Nov. 1939 (*R.E. Turner*); 1♂, same locality, 12 Jan. 1940 (*R.E. Turner*); 2♂♂, 1♀, same locality, Jan. 1940 (*no name*); 1♀, Cape Town, 1 Apr. 1948 (*no name*); 1♀, Port Elizabeth, no date (*N.L.H. Krauss*); 1♀, Worcester, Jan. 1934 (*R.E. Turner*). Paratypes in BMNH, CORN, LACM, SAM, UKAN, USNM.

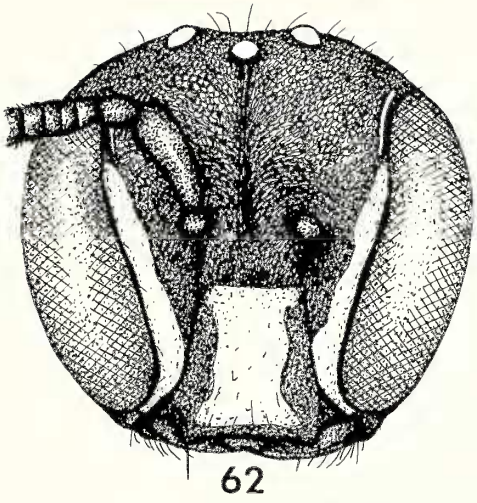
ETYMOLOGY

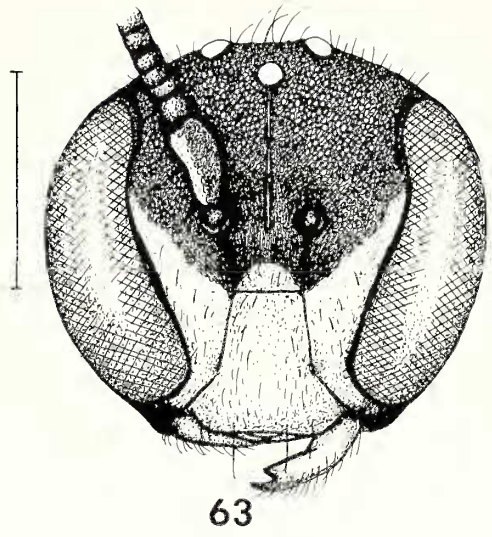
The specific epithet combines the Greek *sagios* (bag) with *ops* (eyes), in allusion to the shape of the lower portion of the eyes.

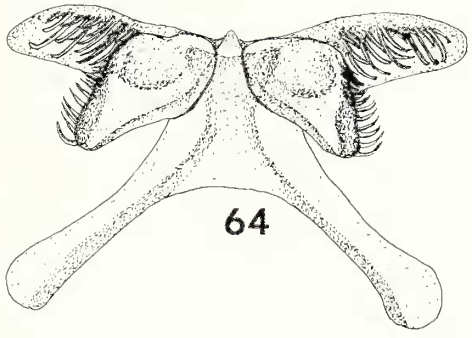
DISCUSSION

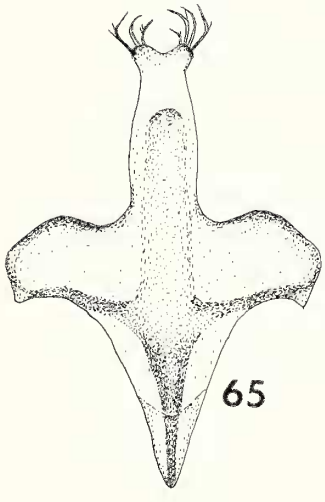
Variation is negligible in the limited amount of material studied. The holotype is the largest specimen. The smallest male has a head width of 0.98 mm and a wing length of 2.65 mm, with according allometric variations. Among the males reduction in development of the glabrous processes of the third to fifth sterna is relative to the size of the specimen. Reduction begins with loss of the polished areas on the fifth sternum and some diminution of those of the third and fourth. Still smaller specimens lose next the pair on the fourth sternum, and the smallest male lacks modified areas on all three sterna.

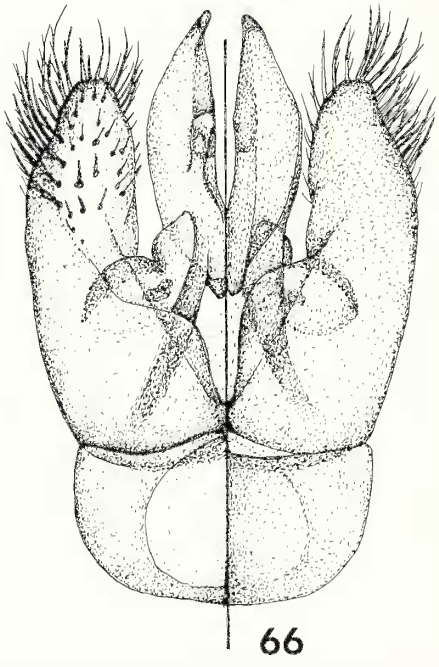
The few females examined are much more uniform. Head











Figures 62-66. *Psilylaeus sagiops:* **62-63,** frontal view of head, female and male (scale line = 0.50 mm); **64-66,** male sterna 7 and 8, genitalic capsule (scale line = 0.25 mm). Figures by R.A. DeNicola.

width varies from 1.05 to 1.13 mm and wing length from 2.59 to 3.32 mm. The smallest specimen has the head width and head length equal. Smaller specimens tend toward loss of punctation on the mesopleuron and first three terga, but expression of this character is not uniformly correlated with size.

The densely tessellate, impunctate integument, small size, and lack of a defined supraclypeal area will readily separate this species from all other Hylaeinae known from South Africa. The trilineate face marks of the female are reminiscent of the genus *Allodape* in the Anthophoridae.

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